WOOD WORKING digest

APRIL 1952

Comments from the Nation's Capital 37
Feature Articles 51-95
Finishing Section 105
Safety Section 171
Veneer & Plywood Section 141
Complete Index 5
Products Index 226
Advertisers Index 228

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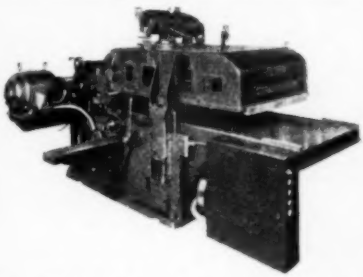

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APRIL, 1952 — OUR FIFTY-FOURTH YEAR

Comments from the Nation's Capital 37
The Editor's Page 45
Pointed Paragraphs 47
Modern Saw Logs Do a Strip-Tease (Part 2) 51
By Paul H. Graham
From Rough Lumber to Fine Furniture 61
By Frank DeYoung
Conservation of Species Through Proper Selection 78
By Arthur W. Priaulx
Know Your Wood 85
Carbides for the Woodworker 95
Better Equipment = Improved Finishing 105
By H. H. Connelly
Hot Spraying Lacquers 127
F.P.R.S. Clinic 131
Types of Plywood (Part 7) 143
By Thomas D. Perry
Veneer and Plywood (Part 19) 161
Safety Is the Responsibility of Top Management.... 171
By Leonard R. Steidel
New Literature 179
Industry Notes 183
Equipment and Supplies 189
Mechanics Through the Ages 202
Buyers' Service 204
The Market Place 205
Products Index 226
Index to Advertisers 228

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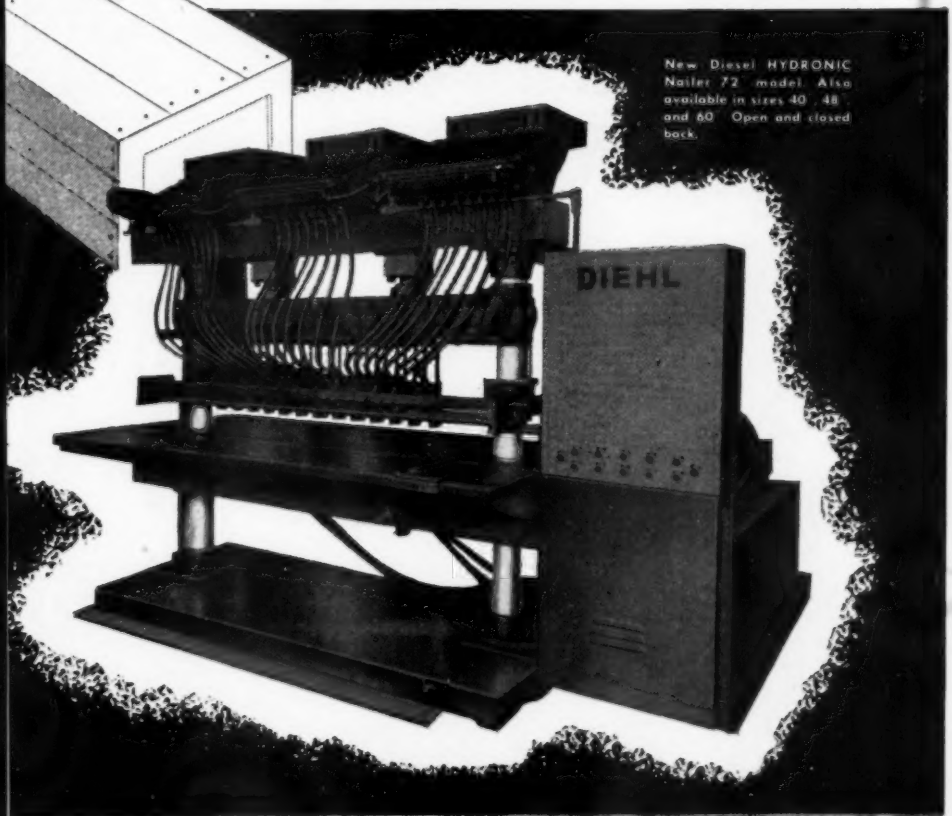

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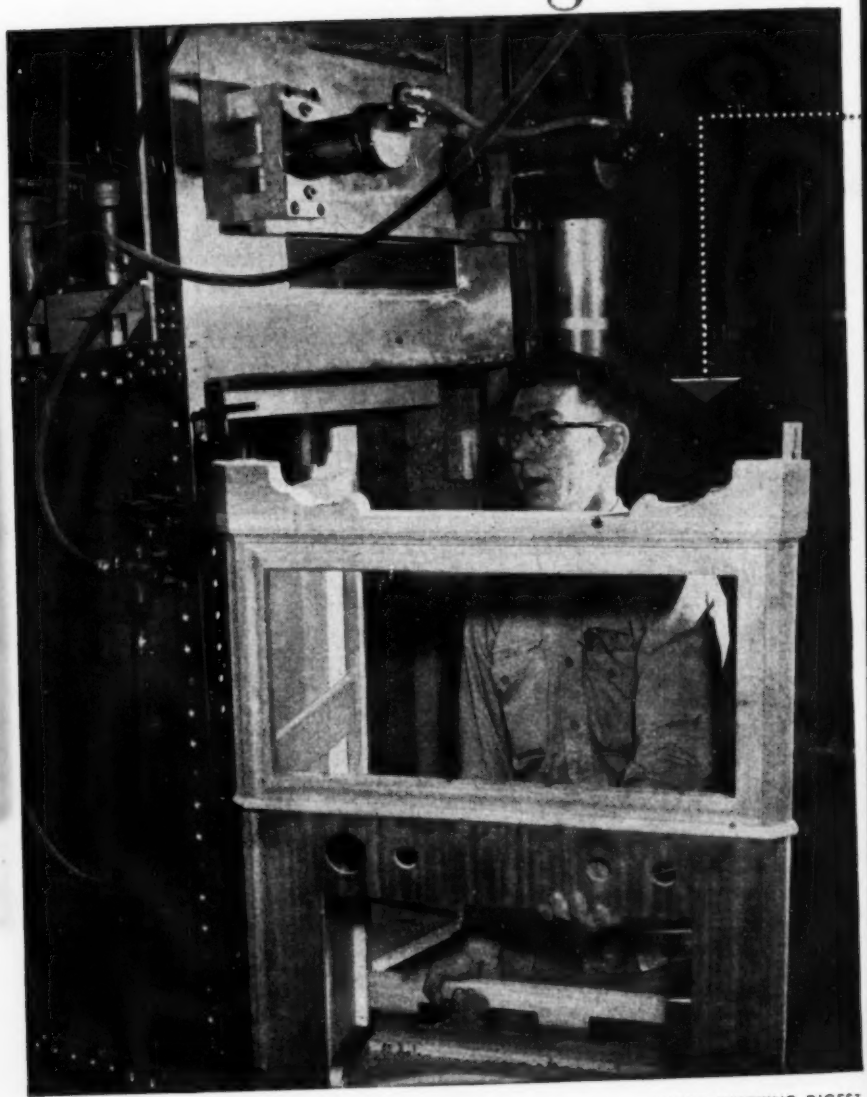

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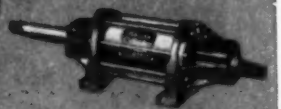
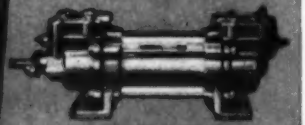

Model 10-M PNEUMATIC CYLINDER



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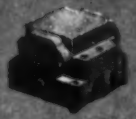

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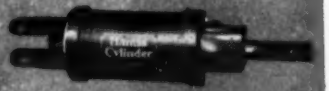

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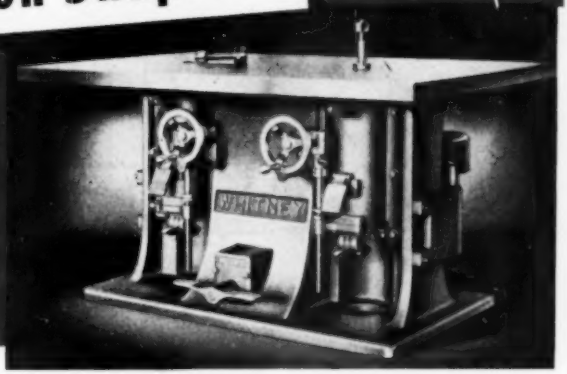

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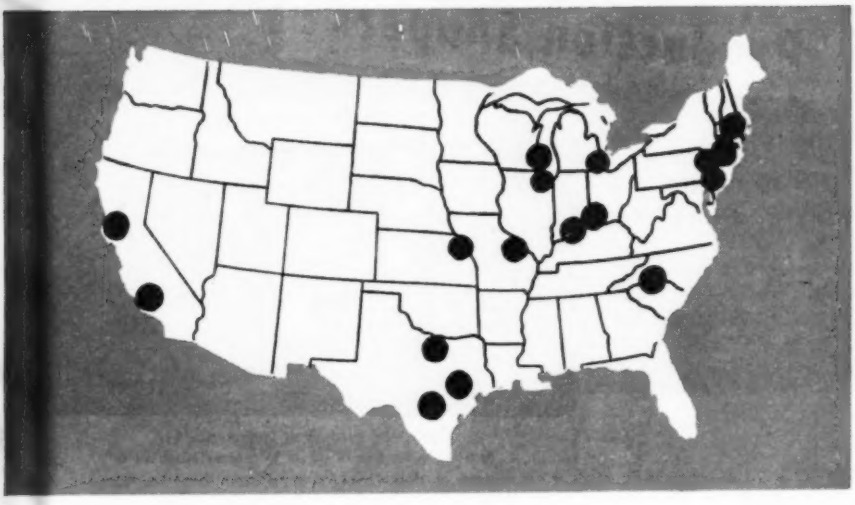

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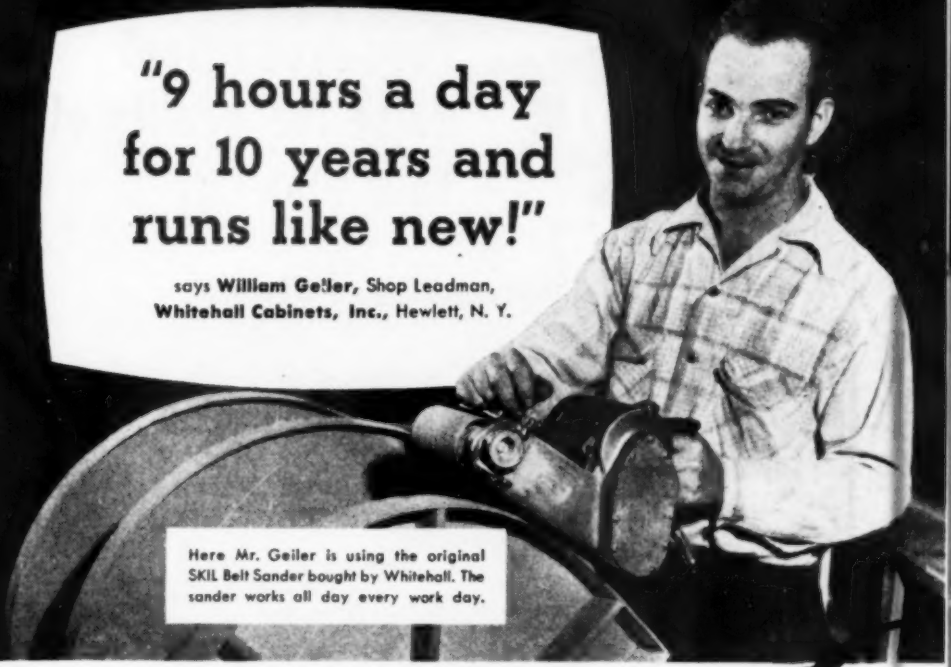

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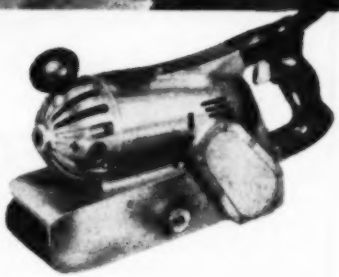

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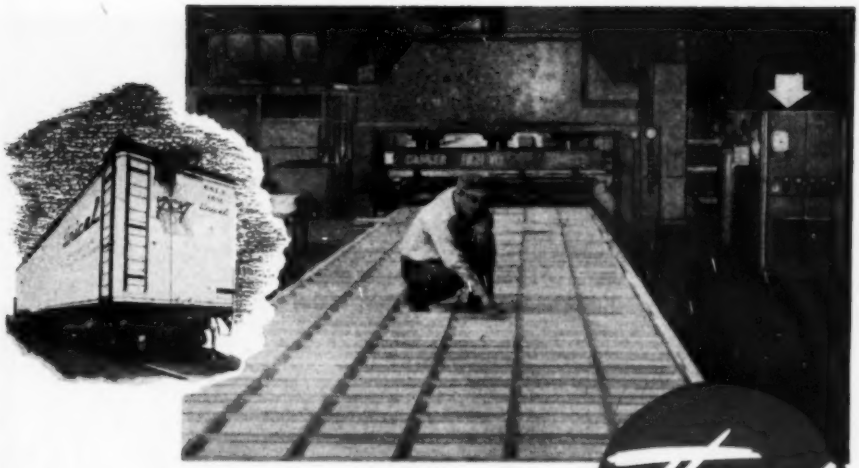

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3 minutes bonding time per joint

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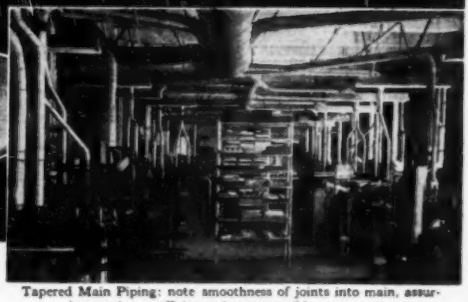

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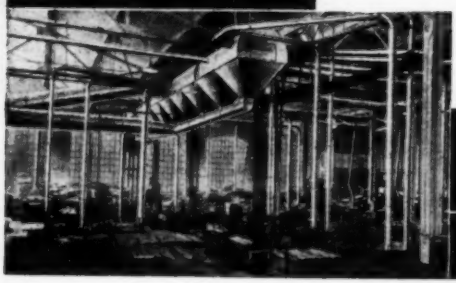

Plenum Main Piping: permits utmost facility in re-arrangement of woodworking machines, since suction is equal at any point in Plenum Main.

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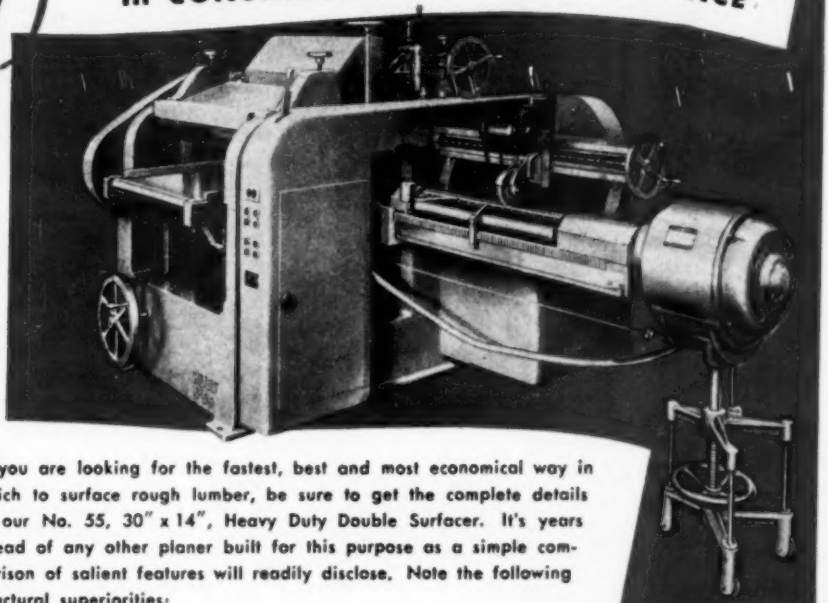

If you are looking for the fastest, best and most economical way in which to surface rough lumber, be sure to get the complete details of our No. 55, 30" x 14", Heavy Duty Double Surfacer. It's years ahead of any other planer built for this purpose as a simple comparison of salient features will readily disclose. Note the following structural superiorities:

1. Variable feed — from 30 to 175 ft. per minute. 2. Chromium plated beds and bars — for longer wear. 3 Heavy built-in grinders and jointers. 4. Anti-friction ball and roller bearings throughout. 5. Sectional feed roll and chipbreaker. 6. Large diameter cutterheads with high-speed TUNGSTEN knives for longer wear and smoother finish. 7. Completely motorized with push-button control. 8. Shearing Bar to prevent damage from loose knots. 9. ONE-SHOT lubrication for smooth running and insurance against neglected parts. Write for complete description. Ask for bulletin 55.

FLOORING MILLS and KINDRED PLANTS

No. 55 is also available in 20-inch width with speed stepped up to 275 ft. per minute. This model has proved itself a "bear-cat" for Flooring Mills and similar operations. Let us tell you about it.

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MACHINE WORKS

MACHINERY SPECIALISTS EXCLUSIVELY

234 EIGHTH STREET
HOLLAND, MICHIGAN

Models to suit . . .

EVERY PURSE *and* PURPOSE!

HIGHLIGHTS OF THE JW-250 *Shown above:*

Extra large tables — solid or sliding section. 43-inch ripping capacity. No build-ups required for working large parts.

Will accommodate saws up to 20" dia. — cut through 6 inches of stock.

Accommodates dado heads up to 4 inches wide.

Equipped with left section sliding table (ball bearing), if desired.

Dust-free, cool-running motor (flat top for greater sawing capacity).

Absolutely accurate tilting mechanism with automatic take-up for wear.

Synchronized brake pedal and push button control. Pressure lubrication, dust arrester, finest gauges, ripping fence and many other outstanding features.

REGARDLESS of the size or nature of your operation or the size of your budget, there's a Tannewitz Tilting Arbor Mitre Saw Bench that will fit your requirements exactly and give you the greatest dollar for dollar value obtainable

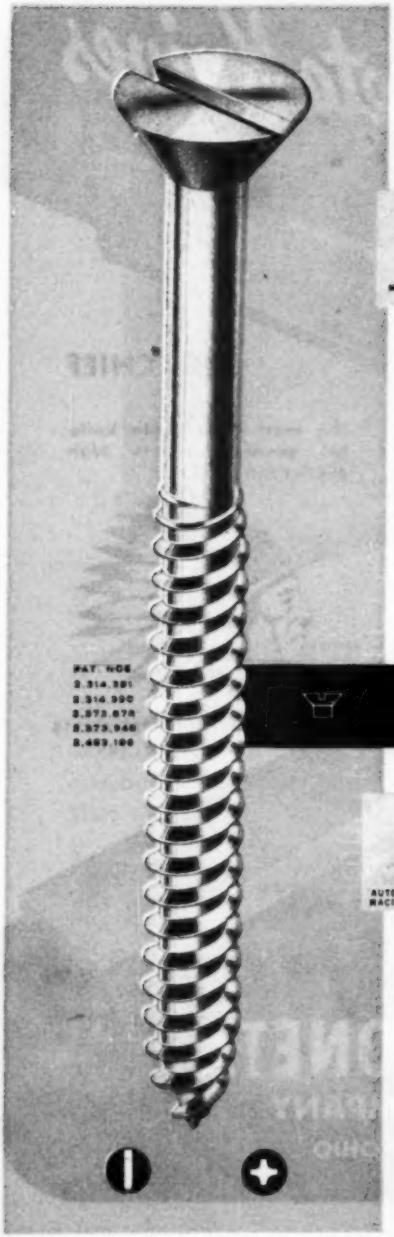
In addition to the JW-250 — top model in America's top line of Mitre Saw Benches — there's the others in the "J" series of Mitre Saw Benches: the "J-250" with standard size top, the "JS-250" similar to the "J-250" but having a sliding left section top; the moderately priced "XJ" series with five table variations to promote the maximum of efficiency for each and every production set-up, and the "U" series for those who want tilting arbor mitre saw benches at the lowest price consistent with quality. When you buy a mitre saw bench it is wise to get a "TANNEWITZ." For more than 50 years this name has been synonymous with the finest in sawing equipment and recognized as such throughout the nation. Write for bulletins. We will be glad to aid you in the selection of the best machine for your particular requirements.

Tannewitz QUALITY

SAWING MACHINERY SPECIALISTS

THE TANNEWITZ WORKS

GRAND RAPIDS, MICHIGAN



Blake & Johnson is headquarters for patented **Twin-Fast®** twin-thread wood screws now available with Phillips head as well as slotted round, flat and oval heads — in brass and steel, bright-finished — in all standard lengths and diameters and some special sizes; others to order.

fastenings

The complete line of Blake & Johnson fastenings includes machine screws, stove bolts, tapping screws, special headed products, nuts, rivets, chaplets, wire forms, and automatic screw machine products . . . in steel, brass and other alloy metals.

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WATERVILLE 48, CONNECTICUT

SINCE 1849

Wapakoneta Knives

ASSURE HIGH SPEED PRODUCTION

BIG CHIEF

The most dependable knife for general purpose high production work.

KNIFE SPECIALISTS SINCE 1891

MOHAWK

Can withstand hard knots in Southern and similar soft woods.

THE **WAPAKONETA**
MACHINE COMPANY
WAPAKONETA, OHIO

Where does ATLANTIC LUMBER go?

Photograph by courtesy of M. P. Moller, Inc. As in many church interiors, this beautiful console is rift-sawn white oak.

Whether Atlantic Lumber reaches the final owner as a finished organ, a suite of furniture, or in some other valued item, you can be sure the manufacturer is well serviced by his Atlantic Man.

Your Atlantic Man is a trained service representative whose experience and knowledge can be helpful to you. It pays you to ask his advice.

THE
ATLANTIC LUMBER CO.
88 BROAD STREET, BOSTON 4, MASS.
1055 SENECA ST., BUFFALO 10, N. Y.

Headquarters FOR HARDWOODS

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

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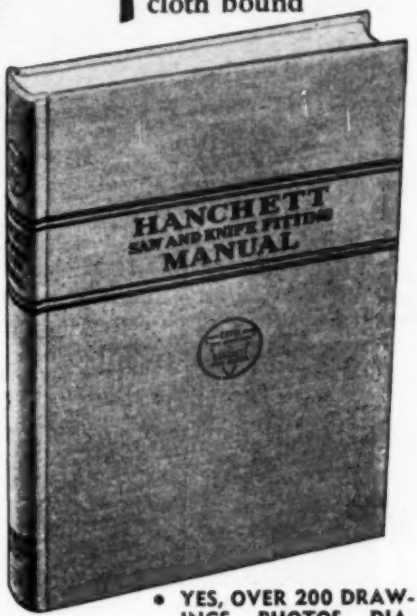

Here—for beginners and experts alike—is an up-to-date book that can pay for itself over and over again! Describes **clearly** and in detail the latest and best methods for securing maximum results in Band and Circular Saw sharpening — tensioning — brazing — welding — swaging — shaping — filing — setting — also knife and shear blade grinding. It's practical — it's authoritative — it's a "must book" for men who maintain — or own this type of production machinery. Order your copy now!

- **YES, OVER 200 DRAWINGS, PHOTOS, DIAGRAMS AND CHARTS —USED WHEREVER PICTURES CAN HELP YOU!**
- **SHOWS HOW TO SPEED THE JOB—AND SAVE MONEY!**
- **472 PAGES OF SOLID, PRACTICAL INFORMATION!**
- **FOR PRODUCTION USERS OF POWER OPERATED MACHINES**

COVEL SAW SHARPENERS • HANCHETT KNIFE GRINDERS

WRITTEN BY EXPERTS IN EACH PHASE OF THIS WORK!

HANCHETT MANUFACTURING CO.

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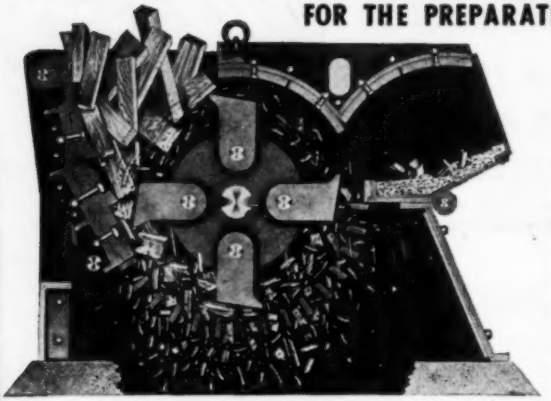
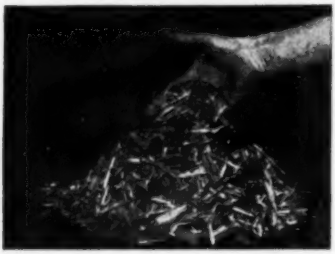
WILLIAMS "NO-NIFE" HOGS

FOR THE PREPARATION OF WOOD REFUSE FOR BOILER FUEL



Sectional drawing of Williams "No-Nife" Hog showing how the fast revolving hammers cut the wood refuse by impact.

Williams new and improved "No-Nife" Hogs are now offered for use in all wood working plants. Experience has proven, that when properly handled, wood refuse is the cheapest fuel for all wood working plants. Therefore, the wood refuse utilized in this manner not only insures a proper fuel supply, but also provides a convenient and economical method of cleaning the refuse from the mill and disposing of it without additional expense.



Hog fuel as made with the improved "No-Nife" Hog.

ALSO USED FOR REDUCING WET OR DRY VENEER AND PLYWOOD SCRAP

The Williams "No-Nife" Hog will reduce wet or dry Veneer and Plywood Scrap to a uniform size wth no long slivers or big pieces—thus the finished product can easily be handled in pneumatic air lines. No need to worry about elbows of your system becoming clogged. Hundreds of satisfied users attest to their dependability.

WC81-2

CHECK ✓ THESE FEATURES

- Many sizes of "No-Nife" Hogs to choose from.
- Adjustments to overcome wear.
- Larger feed opening.
- Hinged cover—instant accessibility.
- No knives to sharpen or be damaged by tramp iron.

WILLIAMS ALSO MAKES...

Hogs and Shredders for making wood flour and sawdust. Vibrating Screens and Air Separators to work in closed circuit with our Shredders for absolute control of product size.

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WILLIAMS

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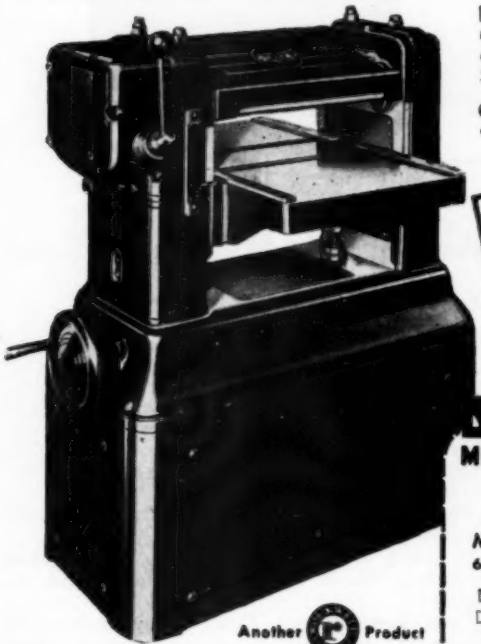
Safest Planer Ever Built
the DELTA 13"×5" PLANER

SAFE! — Cannot "kick-back;" all moving parts completely enclosed or guarded; blades can never strike the table; all controls located within easy reach at a safe distance from the moving stock.

ACCURATE! — "Finish" cuts up to ⅛" deep. One turn of hand-wheel raises table exactly ¹⁄₁₆".

VERSATILE! — Handles any material from ¹⁄₁₆" to 13" x 5" stock. Also 6" pieces unbutted.

EASY TO OPERATE! — Recessed magnetic switch provides absolute control. Blades individually adjustable — quick, accurate; cutterhead easily and quickly changed.



Another Delta Product

LONG-LIVED! — Properly engineered, ruggedly built. Worm gearing lubricated automatically. Only 13" planer with 3 HP motor.

CUT COSTS! — "Finish" cuts eliminate extra operations.

Ask your dealer about Delta's woodworking Big 5
Planers — 13"x5" and 24" models
Circular Saws — 8", 10", 12" models
Band Saws — 14", 20", 36" models
Radial Saws — 4 models
Jointers — 6", 8" models
Also send for Catalog AB-51 use the coupon

There's a Delta Power Tool for Your Job-

53 MACHINES • 246 MODELS
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Step on it for more production

PORTER 43-20J Automatic Hydracut Saw

FOOT PEDAL CONTROL ENDS OPERATOR FATIGUE

Increase lumber production in your plant with these Hydracut Saw set-ups.

1.

Standard Set-up. Hydracut Saw and tables.

2.

Hydracut Saw in single line conveyorized rough mill set-up.

3.

Hydracut Saws in double line conveyorized rough mill set-up.

The Porter 43-20J Automatic Hydracut Saw saves hours of labor . . . enables any cutting room operator, regardless of age, to cut more lumber per day by eliminating tiring hand operation. Operator simply positions the lumber against the adjustable cut-off stops . . . and presses the electrically operated foot control. The saw blade, mounted on a hydraulically operated carriage, *automatically* moves forward to make the cut and *automatically* returns. Fatigue from manual "push-pull" operation is gone.

Stroke length is quickly adjusted by a convenient lever. Cutting speeds range from 0 to 45 cuts per minute.

The new Porter Bulletin 43-20J-1 fully explains the Automatic Hydracut Saw. *Send for your copy today.*

C. O. PORTER Machinery Co.
668 Front Ave., N.W., Grand Rapids 4, Mich.

Speed Up Drilling and Driving!

Switch to BLACK & DECKER POWER!

NEW B&D ¼" HEAVY-DUTY HOLGUN* has *25% more power*, can't be stalled at rated capacity! New handle shaped for plenty of finger room. Husky, high-quality parts make it really *heavy-duty*. Drills holes to ¼" diam. in steel, ½" diam. in hardwood.

NEW B&D NO. 12 SCRUGUN* has *50% more power!* Capacity increased from No. 10 to No. 12 wood screws. Also drives machine screws, nuts and self-tapping screws up to ¼" diameter. Same new handle as HOLGUN*. Positive and adjustable clutch, 90° angle head models available.

*Trade Mark Reg. U. S. Pat. Off.

INDUSTRY'S MOST FAMOUS ASSEMBLY TEAM is finer than ever . . . to turn out more work, at lower cost, with less spoilage! See your nearby B&D Distributor for a demonstration. Write for free catalog to THE BLACK & DECKER MFG. CO., 667 Pennsylvania Ave., Towson 4, Maryland.

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"I see you're having trouble with unseasoned wood, too!"

It takes the best kiln equipment and design to properly dry lumber to a uniform moisture content, and Standard can help you eliminate waste by remodelling natural draft kilns.

Standard remodelling gives better drying and increased output. Whether your kilns are cross piled or end piled, let Standard's engineers show you how to get quality production from your old kilns with great savings in steam consumption through tested and proved STANDARD REMODELLING!

Manufacturers of Internal Fan Kilns

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STANDARD DRY KILN COMPANY

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New HY-PRO PHILLIPS INSERT BITS BIT HOLDERS AND HAND DRIVERS

HY-PRO ... HIGH PRODUCTION PRODUCTS

NEW ... HY-PRO-Phillips Insert Bits

This new, low-cost removable insert bit comes in four sizes. It outwears ordinary Phillips bits two to four times. The #2 size drives from 75 to 80% of all Phillips recessed screws. When one bit wears out it is easily and inexpensively replaced. Clearly labeled and packed in lots of 25 in transparent bags, or in lots of 100 in sturdy cardboard boxes.

Long Life — Perfect Fit. Made by Hy-Pro but sold by Continental Screw, these new high production, Hy-Pro Insert Bits employ the same master tools used to form the recess in Holtite-Phillips recess head screws. This insures a perfect mated fit. Specially heat-treated alloy steel and a unique "Reverse Cold-Heading Process" assure lasting wear and keep this "The Long Life Bit with a Perfect Fit."

NEW ... HY-PRO-Phillips Bit Holders

Made in standard sizes to fit all types of high production power driver, these adapters are equipped with positive ball-and-spring lock to hold bit firmly and still make replacement easy. Magnetic holders also available on order.

NEW ... HY-PRO-Phillips Hand Drivers

Ideal for factory line or home workshop, this new driver comes in sizes #1, #2, #3 and #4 to take corresponding insert bit sizes. Made to highest Hy-Pro Standards. Packed Six Drivers to the specially designed counter display box, each driver complete with one Hy-Pro-Phillips bit.

Send at once for free folder describing these new Hy-Pro products in detail.

—You can count on Continental

CONTINENTAL SCREW CO., NEW BEDFORD, MASS.

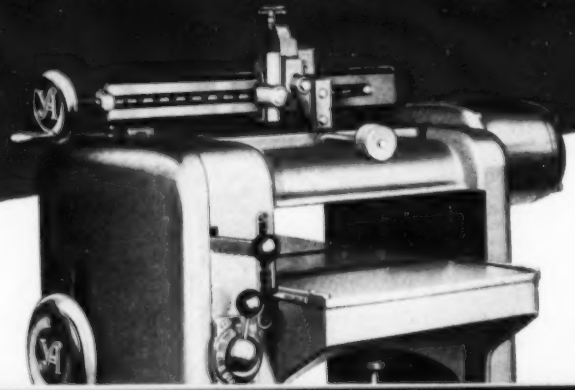
"Husky, for life-time service!"

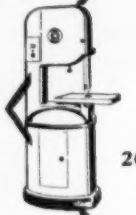
YA

J-LINE

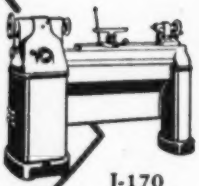
JUNIOR TYPE

WOODWORKING MACHINES





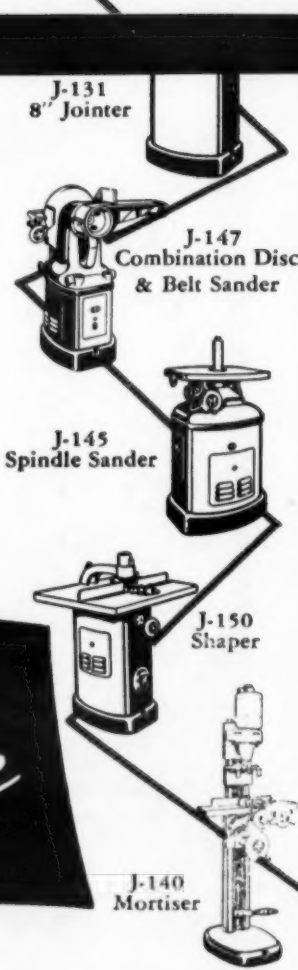
J-120
20" Band Saw



J-170
12" Lathe

J-180
18"x6" Surfacer

J-180
18″ x 6″
SURFACER



J-LINE woodworking machines are man-sized . . . built rugged, to stand up under years of operation! Industrial Arts Departments and Light Industry both acclaim these husky machines as stand-outs. They are modern in design, accurate, efficient, and easy to operate and maintain. Before you buy, be sure to look at J-LINE . . . the complete line, the quality line!

Yates-American

BELOIT, WISCONSIN

BRANCH OFFICES: CHICAGO, ILLINOIS; HIGH POINT, NORTH CAROLINA; MEMPHIS, TENNESSEE; PORTLAND, OREGON.

The Best "Tip" of the Year!

CARBIDE TIP

NEW DESIGN
SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
12"	60	$149.50
14"	60	$153.50
16"	60	$157.50

World's most satisfactory blade for smooth splinter and chip free finished. Especially designed for trimming, mitering and cross cutting fancy veneered panels, ply woods, decorative laminates and solid woods.

Expenses are clipped when it's Big Four Carbide tipped.

BIG 4 SAFETY
SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
5⅜"	6	$14.40
8"	10	$18.60
10"	10	$24.30
12"	12	$31.00
14"	14	$34.20

Revolutionary in design, performance and PRICE. Anti-kickback features mean less operating effort; carbide tips give longer life. Blades for all sawing operations available 5⅜" to 16" diameters. For portable electric, hand- or chain-fed machines.

"Ask your local dealer—if he is unable to supply you, contact us directly."

Big 4 produces saw blades for every purpose, from school room manual training to large industrial projects.

BIG FOUR CARBIDE TOOL COMPANY
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WOOD WORKING DIGEST

CIRCULATION DEPARTMENT

WHEATON, ILLINOIS

WOOD WORKING DIGEST

APRIL, 1952

READERS' SERVICE DIVISION

This insert (please note all four cards) is designed to help you obtain woodworking information. Any of these cards mailed to our Service Division will receive careful attention. There is also a form within the book for shop problems, used machinery, etc. Let us know when we may be of service to you. No obligation.

Please send information on PRODUCTS and SUPPLIES described on the following pages:

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Name ..... **Position** .....

Company .....

Street .....

City ..... **Zone** ..... **State** .....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

Abrasives
Adhesives, animal
Adhesives, casein
Adhesives, resinoid
Adhesives, rubber-based
Air Compressors
Band Saw Tires
Bits, auger
Bits, dowel
Bits, router
Bleaches
Belts
Boring Machines
Chisels
Clamp Carriers
Clamps
Conveyors
Cutters
Dimension Stock
Dowels
Drill Attachments
Drill Press
Drills
Dry Kilns
Dyes
Dust Collection Equipment
Fasteners
Files
Filters
Glue Equipment
Glue, chemical
Grinders, knife
Grinders, saw
Gum Fragrance
Heating Equipment
Hose
Jointers

Knives, molder
Knives, planer
Knives, shaper
Knives, veneer
Lathes
Lumber
Machines, beading
Machines, box & crate
Machines, carving
Machines, clamping
Machines, door and sash
Machines, dovetailing
Machines, dowel
Machines, fitting & shortening
Machines, gluing
Machines, hardening
Machines, matching
Machines, mortising and boring
Machines, shaping
Machines, sticking
Machines, tenoning
Machines, veneering
Mortisers
Moulders
Nails
Patching Material
Paint
Planers
Plywood
Presses, plywood
Putty
Rasps, hand
Rippers
Routers
Safety Clothing
Sanders, contour drum
Sanders, drum
Sanders, edging and finishing
Sanders, portable electric
Sanders, spindle
Sanders, variety
Sandpaper
Saws, band
Saws, circular
Saws, cut-off
Saws, gang
Saws, portable
Saws, radial
Saws, rip
Saw blades, band
Saw blades, portable
Saw blades, circular
Saw Guides
Screws
Shapers
Shaper Cutters
Spray Equipment
Surfacers
Tenoners
Trucks, dry kiln
Trucks, factory
Veneer Cutters
Veneer Dryers
Vises
Washers
Wheels
Wood Treating Compounds

Data will come direct to you from responsible manufacturers. Your request involves no obligation.

Name .....

Position .....

Company .....

Street .....

City ..... **Zone** ..... **State** .....

Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

Vice president Leo Heer of the National Retail Furniture Association was the only representative of the woodworking industries to appear before the Senate Banking and Currency Committee to be heard on the proposed extension of the Defense Production Act. Heer vigorously challenged the need for controls. Other woodworking trade organizations apparently depended on the U. S. Chamber of Commerce and the National Association of Manufacturers. One gets the idea here that most of the organizations devoted to lumber and its products don't want to be directly recorded in relation to political discussions.

Representative Burleson (D., Tex.), introduced HR-6985, the keynote of the House Banking and Currency hearings, which would automatically decontrol items "in adequate supply" and those "selling below ceiling prices for six months." This appears to forecast what will happen to the Defense Production Act.

Secretary Sawyer doesn't want small business functions deleted from the Commerce Department and the NPA. House Appropriations Committee obligingly wiped out the appropriation which would enable the Small Defense Plants Administration to exist, and recommended it be liquidated as fast as possible. But the House, itself, doesn't like Sawyer, and is not enthusiastic about Chairman Cannon of the House Appropriations Committee so, by an overwhelming vote, SDPA got its $850,000 which will enable it to continue to live until June 30, 1952. Thereafter its existence depends upon its ability to justify itself.

During February, various woodworking industries received contracts from the Federal Government totaling $13,162,000. The orders were for lumber, cross ties, poles, plywood, cots, plane tables, wood desks, wood bureaus, pallets, boxes, work benches, office chairs, dummy cartridges, tongue

depressors, drawing boards, gun stocks, packing boxes, desk trays, wood furniture, wood chairs, tables, screenline EQ, parachute tables, tool chests, mess tables, wood spoons, flagstaffs, davenports, wardrobes, crating and wood crates.

The contracts were placed by: Departments of Agriculture, Commerce, Interior, Justice, Labor, Navy, State, Treasury, Air Force, Army and Army-Navy Medical Supply, Army-Air Force Exchange Service, Office of the President, Central Intelligence Agency, Mutual Security Agency, Reconstruction Finance Corporation, Armed Forces Information and Education Division, Armed Services Petroleum Purchasing Office, U. S. Supreme Court, Architect of the Capitol, District of Columbia Government, Federal Security Agency, Government Printing Office, Interstate Commerce Commission, Maritime Administration, National Advisory Committee for Aeronautics, National Archives and Records Service, National Railroad Adjustment Board, Smithsonian Institute, Tennessee Valley Authority, Veterans Administration, Housing and Home Finance Agency, Civil Service Commission, Panama Canal Zone, General Services Administration, Library of Congress, Atomic Energy Commission and Institute of Inter-American Affairs.

If you wish to keep abreast of contracts as they are let, write to Wage and Hours Public Contracts Division, U. S. Department of Labor, Washington 25, D. C., for the weekly bulletin.

H. W. Smith, Jr., recently Assistant Director of the Forest Products Division, OPS, is now Division Director. He replaced Rufus I. Worrell who returned to the Mead Sales Co., Inc., Dayton, Ohio.

Assistant Division Director now is M. C. Walsh, former Chief of the Pulp, Paper and Paperboard Branch. He came to OPS from the Champion Paper and Fiber Co., Hamilton, Ohio.

Lumber is so scarce, they tell you in the Federal Bureau of Supply, General Services Administration, that handles for scrubbing brushes must be made of cold rolled steel, electrically welded, with a nickel ball capping the end of the steel handle. Steel is really scarce, according to Mobilization Director Wilson, and nickel is one of the critically scarce metals; but the Federal Bureau of Supply people still insist it's lumber that is critically scarce.

Ten million, five hundred thousand dollars worth of lumber—700 million board feet recently damaged—is to be salvaged by Interior Department's Board of Land Management on lands in western Oregon, Washington and California. The salvage operation is designed to prevent further damage from tree-killing beetles. The timber is equivalent to 70,000 homes.

Guatemala's vast northeastern Peten mahogany forests are to be opened for the cutting and export of this valuable timber, according to the State Department. Guatemala's Agricultural Ministry is rushing a survey; and airports are being extended to accommodate heavy cargo planes. The tiny shipments of lumber now coming out are floated down rivers in neighboring Mexico. The shortest and quickest route would be via British Honduras, but that way has been blocked because Guatemala claims sovereignty rights

imrie "sipho-fan" progressive kiln

First scientifically accurate, high speed, progressive lumber dry kiln. Your present progressive kilns can be modernized without changing to compartment type kilns or altering handling methods. Equally efficient either end piling or cross piling. Imrie ElectroniK Control provides exact automatic control of temperature, humidity and ventilation during each progressive stage of the drying process. Retain the good features of your present progressive kiln layout. Keep storage and handling costs low. Convert at half the cost of equivalent capacity in modern compartment type kilns.

INCREASE PRODUCTION OF *QUALITY DRIED* LUMBER AT YOUR PLANT WITH THE IMRIE "SIPHO-FAN" PROGRESSIVE KILN!

IMRIE DRY KILN COMPANY

PEARL & OTTAWA —
GRAND RAPIDS 2, MICHIGAN

over British Honduras; the international border has been closed until recently. Britain would like to see the mahogany come out.

Burma wants, in great haste, 16 different kinds of woodworking machinery to be bought with Uncle Sam's Mutual Security Agency funds by M. S. Hill, General Services Administration, Room 7123-B, 7th and D Streets, Washington 25, D. C. Telephone Republic 7500, extension 4021.

The machinery is specified as: (1) tilting arbor variety saw; (2) a., single surfacer; b., universal saw; (3) self feed circular rip saw; (4) Beach model swing saw; (5) No. 1 twelve inch hand jointer; (6) A-00-12 inch deck planer; (7) single end tenoner; (8) chain saw mortiser; (9) hollow chisel mortiser; (10) vertical motor-driven single borer; (11) combination disc and belt sander; (12) single copying lathe; (13) automatic rip and cross-cut saw sharpening machine; (14) sash and door clamping frame; (15) ball bearing arbor grinder; (16) single spindle shaper with shaper guard and accessories.

If you wish to know whether your German correspondent is in business in the Federal Republic of Germany or in the Soviet Zone, you can now get the information by asking the Office of International Trade, Department of Commerce in Washington, or in any Commerce Department field offices scattered around the U. S.

If HR-6993, introduced by Representative James H. Morrison (D., La.), is made law, the Postmaster General must supply flat-top stools for all clerks in post offices everywhere in the United States who sort or distribute the mail. That means several hundred thousand stools.

U. S. Department of Labor reports over the year lumber and lumber-product prices declined 4.2%, due to stock-piling of lumber against anticipated building restrictions, the restrictions themselves, and depressed consumer market for furniture.

S. 2687, introduced by Senator Cordon (D., Ore.), provides there shall be no interference with lumber-yield operations or by any Federal operations to maintain dams or reservoirs. Bill is in Senate Committee on Public Works.

Some wood furniture may be exempted from Regulation W in the next Defense Production Act. The exemption of durable goods costing not more than $50 may be extended to cover goods costing $100.

Defense Mobilizer Wilson says more than half of the expenditure for defense in 1953 will be for aircraft.

If S. 2737, introduced by Senator Bennett (R. Utah), becomes law, the Secretaries of Interior and Agriculture may authorize mining in national forests.

Dollars-and-cents ceiling prices for sales by manufacturers of fir and hemlock lumber produced in California and in the west of the Cascade Mountains in Washington and Oregon were prescribed by OPS in CPR 128, effective March 18, 1952. They are at approximately the same average level established by GCPR on January 26, 1951, which are, generally speaking, prices in effect today.

START using Jewel Garnet Belts for a finer FINISH

For big jobs and little jobs, know and insist upon the lustrous beauty of wood products finished to perfection . . . with Jewel *Natural* Garnet abrasive belts.

Toughened and "tempered" by a special, patented process, Jewel natural Garnet cutting edges are made to last longer . . . to cut cleaner, faster . . . to "fill" less quickly. Exclusive "Velvet Joints", featured on *all* Jewel Brand Belts, eliminate bumpy, uneven belt travel, assure satin-smooth finishes and better overall performance. Most important of all, Jewel natural Garnet abrasives help you make worthwhile production savings right from the start, do as good a job and better than many of the more expensive synthetic grits.

Write us direct or ask your jobber for up-to-the-minute information on the complete line of Jewel Garnet Belts for both portable and large stationary belt sanders. Abrasive Products, Inc., 551 Pearl Street, South Braintree 85, Mass.

SHARPER, TOUGHER

Jewel Brand COATED Abrasives

CUT COSTS!

The order does not apply to mouldings, car strips and shingles. The new regulation spells out base ceiling prices for standard grades and dimensions. On sales made on delivered basis, appropriate transportation charges may be added.

The production area covered by the regulation contains about 60% of the nation's softwood saw timber, and produces about 40% of the nation's softwood lumber. The new regulation conforms with the Capehart Amendment by fixing ceilings not lower than the lowest of prices prevailing just before issuance of the regulation, or prices prevailing from January 25 to February 24, 1951.

Established weights for the various standard lumber products are set forth. Portland, Oregon, in accord with practices in the industry, is established as a basing point for determining freight charges for sales on a delivered basis. Maximum freight charges may be added to f.o.b. ceilings, when delivery is by private truck.

Chester B. Stem, hardwood lumber and veneer manufacturer of New Albany, Ind., was elected Chairman of the Committee on Hardwood Research Administration at the annual meeting of the National Lumber Manufacturers Association in Washington, D. C. Wood truck bodies for the Military and the successful lamination of timbers for U. S. Navy ships were the prime subjects at the meeting.

W. D. Hagenstein, Chief Forester, Forest Conservation Committee of Pacific Northwest Forest Industries, Portland, Ore., in testimony given before the Senate Public Works Committee and the House Public Works Committee called for an enlarged system of timber access roads to and in the federal forests. Hagenstein underscored that despite federal government ownership of 53% of the timber in the Pacific Northwest, private timber operators in the last decade, with only 40% ownership of the region's timber, have provided an average of 83.4% of the logs used for the manufacture of lumber and other forest products.

He told the committee that the U. S. is responsible for half of the world's total lumber production; and that World War II, the most highly mechanized conflict in the history of the world, utilized more wood than did all this nation's previous wars combined. No one really knows the full operating capacity of the lumber industry. He estimated there are from 50,000 to 60,000 sawmills in the U. S. Plywood in one kind of training plane saved more than 600 pounds of aluminum per unit. Wood industries in World War II supplied over 1200 different items for the Army alone.

NPA in March gave producers of wood household furniture 546 tons more carbon steel, in addition to its first-quarter allotment.

Firm in France (755) wants to secure equipment and license to manufacture American paints and varnishes. Another French firm (764) wishes to secure machinery to utilize wood scrapings to manufacture wallboard glued by synthetic resins. Another firm (790) wishes to manufacture, or assemble, in France small wood articles. You can get details (mentioning numbers) from Office of Small Business, Mutual Security Agency, 806 Connecticut Avenue, N. W., Washington 25, D. C.

FASTER FASTENER News

"When it's TWIN*fast* it stays fast"

Up-to-the-minute pointers on speeding assembly — cutting construction costs

POWER SCREW DRIVER DRIVES SIX SCREWS IN SINGLE ASSEMBLY IN EIGHT SECONDS

Power screw drivers which automatically position the nuts on the under side of the assembly, feed the screws through the assembly, and tighten to any predetermined tension, are being used for increased speed and better assembly.

A typical setup drives six screws in a single assembly in eight seconds, including time to unload and reload the fixture.

These machines can drive cap screws as large as ⅝ in. diameter, sheet metal screws up to No. 8, and wood screws up to No. 14, 1⅝ in. long. Torques up to 70 lb. ft. are available. Also, screws as small as ¼ in. in length may be handled.

These power screw drivers are now being used in the manufacture of automobiles, trucks, accessories, electric and radio devices, plumbing, heating and air conditioning equipment, stoves, toys, lighting fixtures, door hardware, and other items.

PARALLEL TWIN THREADS CUT DEEP AND CLEAN

Instead of the usual single thread spiraling the root, the TWIN-fast Screw has *two* threads. They start in a single, centered point, spiral the root in parallel formation, and end on opposite sides of the shank. Result, a thread pitch approximately twice as great as the pitch in ordinary screws.

The sharp, blade-like edges of these twin threads cut deeply and cleanly into the material, cutting driving time in half, greatly increasing holding power.

The greater thread pitch of TWIN-fast has a double advantage in fast, strong assembly of wood to wood, wood to plastics, wood to metal: (1) Driving time is greatly reduced. With each turn of the driver, twice as much thread enters the material. (2) Holding power is greater because only half as many turns are needed to seat the TWIN-fast Screw. The threads cut in the material are subjected to only half as much friction and wear, thus reducing the danger of stripping

CENTERED POINT INSURES QUICK START, BALANCED DRIVING

TWIN-fast threads come together in a single sharp point at the exact axial center. The screw enters the material straight on — and in line with the driver. This contrasts with the eccentric gimlet point of the ordinary wood screw which is located off-center and enters the material at an angle.

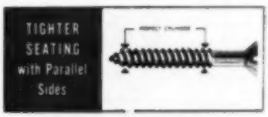
This centered point means a quick, sure, self-centering start since the TWIN-fast

Screw automatically heads in the right direction. It also keeps the screw in line so that there is no misalignment or displacement of assembly components.

RELIEVED SHANK PREVENTS SPLITTING AND WEDGE ACTION

Relieving the shank of a screw eliminates the wedge action which might otherwise split soft and brittle woods and tend to weaken the seating by pulling material away from the threads. Relieving also prevents the stripping that often occurs with screws not having a relieved shank.

The relieved shank of TWIN-fast Screws provides a stronger fastening



PARALLEL SIDES GIVE GREATER THREAD CONTACT

The perfectly cylindrical body throughout the threaded length of a TWIN-fast Screw, except for the taper at the point, gives it greater thread contact, tighter holding, and also often allows the use of fewer and smaller screws.

For additional fastener information and your copy of the new TWIN-fast bulletin, send the coupon to any of these firms:

American Screw Company
Willimantic, Conn.

Blake & Johnson Company
Waterville 48, Conn.

Central Screw Company
Chicago, Illinois, and
Keene, New Hampshire

Continental Screw Company
New Bedford, Mass.

National Screw & Mfg. Co.
Cleveland, Ohio, and
Los Angeles, Calif.

Stronghold Pacific Corp.
Downey (Los Angeles) Calif

Stronghold Screw Products, Inc.
Chicago, Illinois

Southington Hardware Mfg. Co.
Southington, Conn.

Townsend Company
New Brighton, Pa.

Please send copy of the new TWIN-fast bulletin.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

TWIN*fast*

Reg. U. S. Pat. Off.
Pat. Nos. 2,314,391 – 2,314,390 – 2,373,878 – 2,373,948 and 2,485,156

The Faster-Driving... Cost-Cutting Fastener

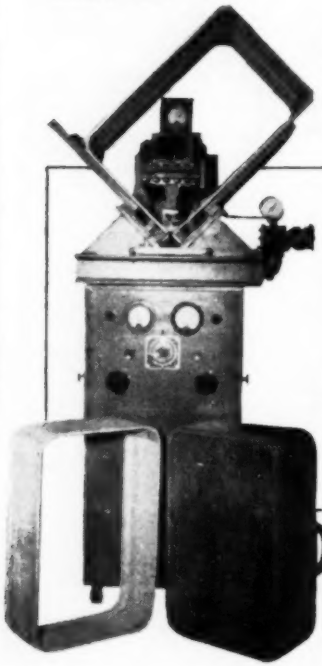
Now H-F Gluing SPEEDS Box Production

The NEW HIGH-FREQUENCY* RAYBOND BOX PRESS

Don't stick to inefficient box-making methods. The NEW RAYBOND HIGH FREQUENCY BOX PRESS increases production 50%, saves manpower, and cuts glue-curing time to seconds.

And that isn't all! The NEW RAYBOND HIGH FREQUENCY BOX PRESS in single units or multiple production line set-ups makes boxes of varying sizes and depths (see specifications). Its versatility will amaze you. Put this remarkable Box Press to work for you.

Write now for details.



SPECIFICATIONS

Capacity of press: 13" in depth. Special presses available up to 20". 1, 2, 3 or more boxes can be processed simultaneously.

Box sizes: Minimum 9" x 9" with any depth to full capacity. Special presses available for smaller sizes. Maximum unlimited except in depth.

Heating time per press cycle: 30 seconds maximum. High Frequency power required for one press and 30 second heating cycle 1 k.w.

Operational requirements: One operator can handle as many as four Raybond Box Presses — with two presses being loaded and unloaded while the other two are curing.

Size requirements: Boxes of different radii corner pieces can be made in the same press. No plywood is needed to obtain large radius corners. Boxes made from box shook lumber.

Lower Costs, Double Production, Dependable Performance

ELECTRONIC HEATING CORP.

66 Needham St., Newton Highlands, Mass.

Advertising "Tie-ins"

Throughout the years there have been any number of variations on the theme — "It pays to advertise." The job of gaining public acceptance for this axiom has been done so well that attention can be almost completely directed toward expressing an effective advertising message in a better way.

Advertising history shows that all sorts of media have been used — from the clever stunt to the carefully written copy backed by advertising research. One type of copy which we believe outstanding in its effectiveness is the advertising "tie-in."

A recent magazine article claims that the tie-in makes sales sense. The example given in the article was well removed from the woodworking industry, but the idea can be used by many who are selling products for our industry.

For example, the tie-in idea used in woodworking would show a room finished in plywood paneling furnished by one manufacturer; the adhesive from another and possibly the stain from a third. This idea particularly applies in advertising slanted toward consumers and indirectly to retailers.

The article says, in part, "In an era of tie-in advertising when more and more advertisers are riding on each other's coat tails for the purpose of saving space costs, and effecting a hook for retailers to hang promotions upon, it is refreshing to discover a tie-in that makes sense from everybody's point of view: the consumer, the retailer and the joint advertiser."

With the necessary increase in the cost of advertising in all types of media, consumer magazines in particular, this tie-in type of share-expense advertising should find many adherents in our industry. A few possible combinations might include: plywood paneling with furniture — a piano, organ or television set; wood Venetian blinds with wood sash; hardwood floors with furniture, rugs or carpets. As mentioned earlier, adhesives, veneers and stains have good opportunities to combine with furniture in this tie-in type of advertising.

Going just a bit further, this tie-in advertising is thought to be very effective in bringing out a new product.

With most of 1952 ahead of us and with optimistic reports coming in from all segments of the industry, this may be the right time to try a type of advertising still rather new to our woodworking industry.

Ned Bailey
Editor-in-Chief

"HORRIBLE EXAMPLES?

. . . these have all been corrected"

WE asked a well known manufacturer of fine furniture if he had any "horrible examples" of what wintertime dry air did to his wood. His reply:

"We are sorry to tell you that we do not have any HORRIBLE EXAMPLES in the way of warped or cracked pieces of furniture in our plant. Before we humidified our entire plant, we did have a lot of these cases — too many for comfort. This has all been corrected through humidification with your Armstrong Steam Humidifiers.

". . . wood takes on a lot of moisture during the summer, and when the windows are closed during the fall and winter heating season, the moisture is promptly dried out and creates the cracking and warpage to which you refer. We are sure that if you contact an *unhumidified* plant in late October or early November, you will find plenty of horrible examples."

ARMSTRONG MACHINE WORKS
863 Maple Street, Three Rivers, Mich.

Complete details on Armstrong Steam Humidifiers are in Bulletin 1772, free on request, or, better yet call your Armstrong Representative and start saving right away.

ARMSTRONG *Steam* HUMIDIFIER

Despite government controls designed to hold down home building, the nation apparently has a brand-new, full scale housing boom on its hands. For the second successive month the Bureau of Labor Statistics reports a substantial increase in housing output with all sections of the country sharing in the trend. February was 13% above January and consensus is that this will continue throughout the summer.

Sustaining the above prediction, or at least contributing to it, is the report from Washington that FNMA will need and probably get one billion dollars to finance the 200,000 or more dwellings scheduled to be built for defense workers in '52. It is further indicated that private builders and mortgage bankers can expect substantial help from Congress in financing defense housing.

Wood handle manufacturers for garden tools, the demand will be greater this year than ever. It is conservatively estimated by the U. S. Dept. of Commerce that there are at least 17 million U.S. families who will have home gardens this year.

Douglas fir sawmills along the Oregon, Washington and northern California coast are ready for another busy year as production, orders and shipments for the first two months of 1952 almost equal last year's record figures.

Lumber in short supply, according to the governmental List of Basic Materials and Alternates are: Port Orford cedar, cypress, thick clears in Douglas fir, eucalyptus, southern longleaf pine, exterior softwood plywood and teak. All other hardwoods, softwoods and various types of wood products are in approximate balance or fair to good supply.

Furniture market dates have been set for the next eight shows. Here they are: June 16-26, 1952; January 5-16, 1953; June 15-25, 1953; January 4-15, 1954; June 14-24, 1954; January 10-21, 1955; June 20-30, 1955 and January 9-20, 1956.

With so much being written and said about high costs in all industries, it was interesting to come across a WOOD WORKING DIGEST account book from the year 1899. Incidentally, the magazine was then known as the "Lumber List." Total cost of composition for the April issue, 1899, was under $35.00 and the printing and binding of that month's number was $115.00! Today's figures are stupendous in contrast to the early expense record.

It was also interesting to note that a number of firms such as Atlantic Lumber Co., Standard Dry Kiln and others who used the book at the turn of the century are presenting their advertising messages in current issues of the Digest.

The Forest Products Research Society plans to hold its annual meeting at Milwaukee, June 23-25. No industrial exhibition is scheduled. Elsewhere in this issue you will find the program outlined.

Someone has described Utopia for the average taxpayer as a place where we could have: 1951 incomes, 1928 dividends, 1932 prices and 1912 taxes.

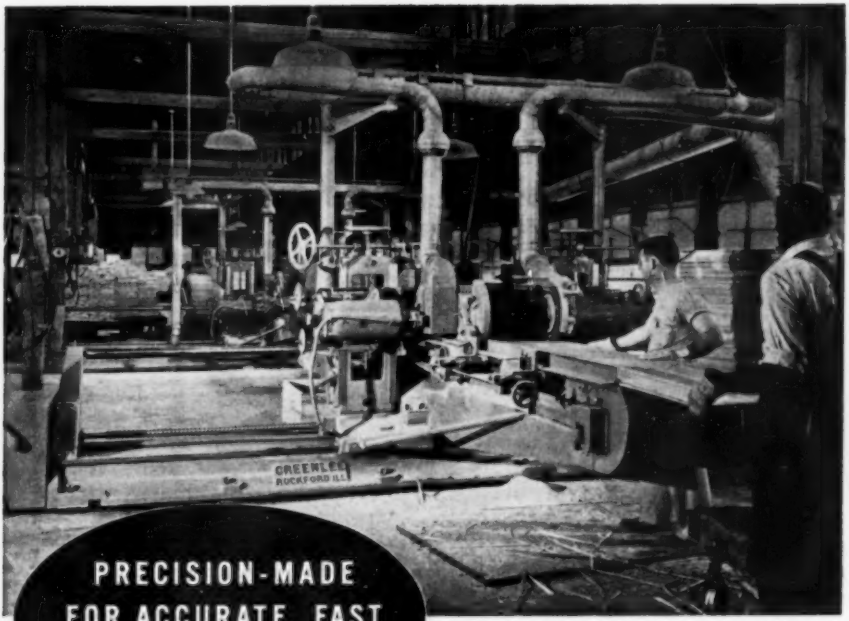
New address for the Northeastern Wood Utilization Council is 119 Whitney Ave., New Haven, Conn. We are a little late with this notice, but if you haven't heard before, here it is now.

Too late to be included in "Industry Notes," word comes that the Amidon Lumber Co., Brockway, Pa., has sold its complete stock of lumber and dimension to the Mid-Penn Lumber Co., Curwensville, Pa. The new company expects to wholesale Pennsylvania hardwoods besides making furniture dimension.

A "baby" lumber dry kiln is soon to be sold by the Guthrie Dry Kiln Co., Spokane, Wash. This kiln is constructed to hold four to five thousand board feet of lumber. The kiln is 12' wide and 32' long and has been specifically designed for the smaller units of the woodworking industry.

"From Rough Lumber to Fine Furniture" was carefully chosen for this April issue. Read it and note the efficient organization a large furniture manufacturer applies to his operations up in Sheboygan, Wisconsin.

Three additional defense production pools have been approved by the Defense Production Administration for handling defense contracts and sub-contracts. One of the three is Specified Finishes, Inc., of Chicago. The organization comprises seven companies located in and around Chicago with a total of about 435 employees. It is equipped to produce "protective coatings" such as paints, varnishes, enamels, lacquers, oils and adhesives.



GREENLEE DOUBLE CUT-OFF SAW IN OPERATION AT STATESVILLE PLYWOOD AND VENEER COMPANY

PRECISION-MADE FOR ACCURATE, FAST PRODUCTION

...Greenlee No. 542 Electric Double Cut-Off Saw

"We wish to congratulate you on the fine double-end trim saws recently placed in operation here. They show beautiful workmanship and they really do a fine job."

That's what Mr. Elbert M. Shelton, president of Statesville Plywood and Veneer Company, Statesville, N. C., has to say about their new GREENLEE No. 542 Cut-Off Saws.

Reasons are many why the GREENLEE No. 542 does such smooth, accurate work . . . and at high speed! First is because each one is made so sturdily . . . built to handle the work with ease and stand up under production requirements at high speeds for a long, long time.

Next is its "watchwork like" construction and the precise setting arrangement which permits making adjustments to a fraction of 1/64". Accurately graduated dials show the exact setting of the movable housing, and the machine cuts exactly to the size indicated by the dials.

And remember, too, the GREENLEE No. 542 is extremely versatile. In addition to its double cut-off operations, with attachments it will handle your shaping, relishing, tenoning, dadoing or scoring.

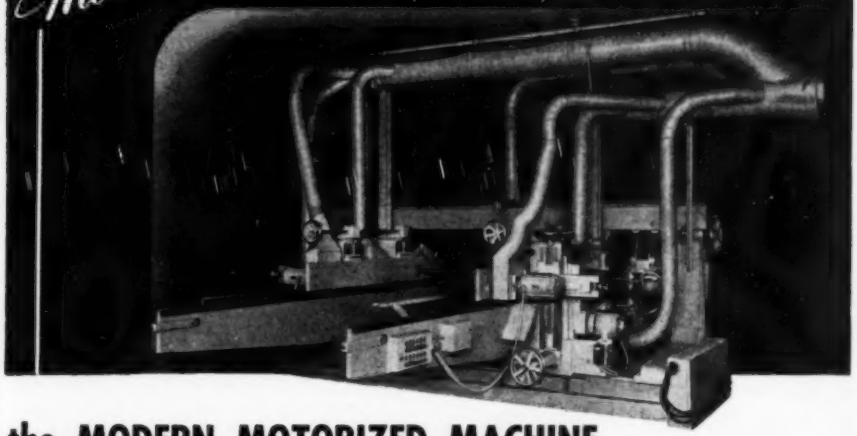
Get all the details on this precision machine today. Write Greenlee Bros. & Co., 1864 Twentieth Avenue, Rockford, Illinois.

MACHINERY & TOOLS
GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING and BORING TOOLS

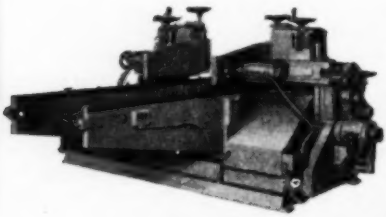
Mereen-Johnson

DOUBLE-END TENONER



the MODERN MOTORIZED MACHINE with Welded Steel Construction

Many intricate and special operations can be performed on the No. 400 Tenoner. Each machine is made to fit your requirements in a variety of sizes up to 20 feet or more between tenon shoulders. Chain beams can be extended to square cut up to 96 inches or more ahead of trim saws. Welded steel construction makes the beams 2 to 2½ times stiffer than cast iron. Optional equipment includes patented V-belt driven high speed cope motor units, stationary or jump dado arbors, scoring saws, tilting tenon motors, jump relishing attachment, window side frame grooving attachment, and many other items. **Write for Bulletin No. 400.**



Mereen-Johnson

DOUBLE CUT-OFF SAW

The No. 300 Saw can be depended upon for accurate production at high rates of speed. It is made in a range of sizes to fit different conditions, and can be equipped with such labor-saving attachments as cope motors, stationary or jump dado arbors, or other devices to meet specific problems. **Order Bulletin No. 300.**

Mereen-Johnson MACHINE COMPANY

4401 LYNDALE AVENUE NORTH • MINNEAPOLIS 12, MINNESOTA

Modern SAW LOGS *Do a* STRIP-TEASE

PART 2

By PAUL H. GRAHAM

OTHER peeler barkers operate similarly to conventional lathes in that the machine automatically centers the ends of the log between power-driven chucks or dogs which turn the log slowly against a fixed knife or rotating cutterhead mounted along a motor-driven shaft. The latter type of barker, with the rotating cutterhead, is usually a portable machine operated by three or four men. It usually has capacity to bark from 120 to 200 small logs or bolts per hour to produce clean cylindrical logs or posts. Wood loss is relatively high with this type of barker.

Larger machines of the lathe type are used to bark peeler logs mounted between massive headstock and tailstock sections. The headstock spindle is motor-driven by a self-contained power unit to provide rapid positioning of the chuck for dogging while the tailstock contains a power-dogging unit. High or low speed selection is possible by means of a shifting lever and quick-acting lever lock.

The cutterhead is supported on a carriage that moves parallel with the log and the operator controls the travel speed of the cutterhead carriage. A power cross-feed positions the cutterhead with relation to the diameter of the log to be barked. The depth of cut is manually controlled by the operator with a tilting control that permits the cutterhead to follow the contour of the log.

In operation the log to be barked is swung into position between the two spindles which themselves are positioned by individual motors. A powerful electric motor performs the dogging by driving the dogging spindle against the end of the log with sufficient force to set both dogging chucks simultaneously. The log is then slowly revolved and the rotating cutterhead is brought to bear on the log to permit its knives to rapidly remove the bark.

Peeler logs prepared at this barker are surfaced evenly for more efficient operation of the veneer lathe, with much less wood loss than was formerly wasted during the rounding-up operation, and all abrasive material that might damage the costly veneer lathe knife is removed with the bark. This barker will remove bark from logs up to 10 feet in diameter and up to 12 feet in length.

Another lathe barker used for barking veneer logs removes the bark only, and does not cut into the sapwood, by means of an adjustable scraper blade. Pressure supports for the scraper arm and chucks are air-operated. The air chuck is the only turning part during the barking operation and chucks

View of Nekoosa portable wood peeler from infeed end of machine. Rough wood fed by means of driven rolls mounted on angle adjustable to vary speed of feed is barked by hammers striking at rate of 36,000 times per minute. Has average capacity of seven cords per hour—3" to 12" diameter and 4' to 8' lengths—and has peeled as high as 60 cords in an eight hour day.

Courtesy Nekoosa Foundry and Machine Works

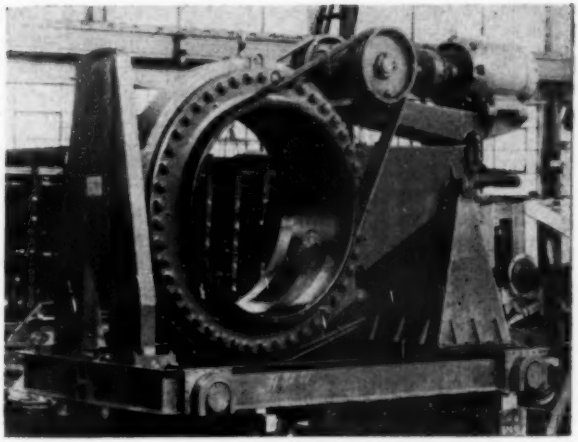
the peeler log much more quickly than standard screw-type chucks, due to the speed of the double-acting air cylinder. Instantaneous action of the air cylinder eliminates slabbing when releasing the log, as the chuck is completely out of the way when the log drops.

The barker carriage travels by means of two heavy-duty conveyor chains, one to each side, to assure even movement and has a motorized screw drive. The scraper head arm is extra wide and the scraper blade is held only in the center to permit it to shift to follow the contour of the log. A cross carriage accommodates the scraper infeed carriage and can be arranged as a complete double unit to mount both scraper and dado heads, or two single units—one for the scraper head and one for the dado head—with easily removable lock pins to disengage the dado unit when not in use to cut out defects in the log. While this is a complete barking machine, the scraper unit and air chuck can be adapted to any standard barker very easily.

Operating more on compression rather than cutting operation, another barker commonly used for barking peeler logs mounts a curved one-inch steel plate shoe with the nose rounded so there are no sharp edges. An air cylinder mounted on the compression shoe delivers about 100 p.s.i. on the barker head and the entire barker is mounted on a rail-mounted carriage.

The peeler log is mounted between the barker chucks and an electrically-operated carriage moves back and forth as the log is rotated between the chucks. When pressure is applied to the barker head, the bark is squeezed off the log. The operator rides the carriage which has its travel controlled by push button and barker control is by finger lever on the air-cylinder valve. A dado head is often mounted above the compression shoe to shave off burls and other surface deformities before barking by compression.

Usually only one pass across the log is needed to remove the bark with this type of compression head barker taking about 1 1/2 minutes. An average of 550 peeler logs are barked per day. The amount of pressure required on the compression shoe for efficient barking



View of Hansel whole-log ring type hydraulic barker at Weyerhauser Timber Co., Snoqualmie Falls, Wash. This is a 60" upright barker driven by a 50 h.p. motor and operated at a maximum log haul speed of 60 f.p.m. to bark logs of a minimum log diameter of 6" and a maximum butt diameter of 54" and a minimum log length of 8'.

varies according to wood species and seasonal conditions. Less pressure is required during early summer, the easy barking season; 100 p.s.i. is usually sufficient for 100% bark removal.

Abrasion or Friction Barkers

The most familiar type of friction is the tumbling barker used by the pulpwood industry to peel and clean pulpwood sticks. These were developed in the early 1900's, about 1903 or 1904, and usually consisted of a large horizontal metal drum made up of longitudinal bar members riveted within rings which ran on trunnions. Cut logs were conveyed direct from the saw to the barker where the bark was removed when the logs were rolled against each other on the inside of the drum as the drum rotated and water was sprayed on them from overhead nozzles to wash bark and sand away.

Many conventional drums in use today are still built with rings and bars either riveted or welded together. Others are constructed with an all-welded plate drum so the heavy shell is integrated into a solid one-piece tube for better shock resistance. This produces a barking drum of extreme simplicity and strength. The shell is exceptionally heavy to withstand shock and the few elements are merged into one piece. A typical chassis contains only four trunnions riding on eight bearings and the large 8-ft. diameter trunnions rotate slowly and carry the drum easily.

A typical welded-plate drum is made up of about six rolled steel plates, about 1 1/8-inch thick and weighing about 11,900 lbs., which run the entire length of the drum. The rotating body weighs about 135,000 lbs. Shell components are welded throughout. Trunnion rims are first erected on trunnions and the plates are then cradled within and welded in turn. Up to 10 reinforcing rings are used and have cross sections of about 1 1/2 x 6-inches and are supplied with three segments. Filler bars close bark slots at the center and keep bark out of the drive. Since there is a higher head of wood in the feed end than at the discharge, a conical ring is usually installed at the feed end to decrease the opening and to neutralize any tendency toward end thrust.

A drum barker of this type measuring 12 ft. by 45 ft. has a barking chamber

Courtesy Ederer Engineering Co.

Scraper blade of Ederer scraper type barker is held only in center to permit it to shift to follow contour of log. Barking pressure is provided by air cylinder and produces about 100 p.s.i. Chucks are also air-operated for fast chucking action due to speed of double-acting air cylinder.

of 11 ft. 3/4-in. by 45 ft. to accommodate a volume of 4,500 cubic feet of wood. Wood in a drum half-full will amount to 12.4 cords. Power of 100 to 150 h. p. is required to maintain an average running speed of 5 to 8 r.p.m. and the barking capacity of the drum varies with its speed of rotation. Some of these drums are operated up to 15 r.p.m.

Various sizes and types of horizontal rotating drum barkers are made, from 10 to 12 feet in diameter and from 30 to 45 feet in length, all of which operate on much the same friction barking principle of rolling the logs against each other to wear the bark from the log and washing the bark away by water spray. All of these barkers have some tendency to broom or splinter the ends of the logs.

Smaller drum barkers have also been developed which operate on the drum barking principle. In some of these the drum rotates and in others, the drum is stationary and mechanical means are provided to rotate the logs inside the drum. Most of these smaller drum barkers are mounted concentric or eccentric to the rotating axle. The drums are rotated at 25 to 35 r.p.m. by gear or chain drive. Power requirements range from 5 to 20 h.p. for concentric machines to 25 h.p. for eccentric machines.

The eccentric machine, while requiring more power for operation, provides more of a sliding motion to the logs or bolts for better barking results. Any of these smaller barkers can be operated by a crew of two and their daily output depends upon how fast the machine can be loaded and unloaded. A normal charge is from 80 to 100 sticks; softwood barking takes from 12 to 35 minutes, according to species, condition, season and type of machine. An eccentric axle drum barker, for example, has barked a charge of 100 pine fence posts in 12 to 25 minutes. Hardwood takes somewhat longer and cannot be barked satisfactorily by drum barking during the winter season. From April to September, hardwood will bark as readily as softwood.

A special drum barker developed in the south to peel and concentrate pulpwood looks like a ready-mix concrete unit and operates as a truck-mounted barker to bark pulpwood in transit to a central loading point. Its drum does not rotate but fixed arms operate from a rotating axle through the center of the drum to form pockets to carry the wood for barking. Steel brushes and lugs are positioned inside the drum to assist in barking and cleaning.

This machine is said to peel an average of 12 to 15 cords of pulpwood per day with a crew of three and has peeled as high as 23 cords in an eight

hour day. When used in a single location, this barker can regularly produce four to five cords per hour, but longer operation time is required where the wood is scattered. In the latter case, loading time amounts to about twice the time required for actual barking.

Various mechanical devices are used in friction barkers that do not rely upon drum rotation for the frictional movement required to bark the logs. In one of these, three metal pockets are provided that are wide enough to accommodate the wood length. A pair of rotating cams extend through the bottom of each pocket and serve to agitate the logs in the pocket. Water is sprayed on the logs as they rub together in the pockets and they gradually work from pocket to pocket until they emerge from the discharge end of the barker. This barker is especially popular where water-stored wood is to be barked and works most effectively the longer the wood has been in storage.

Another barker that is much used on water-stored logs has a single hopper, wide enough to accommodate an 18 ft. log. This barker is equipped with a set of three or four chains to roll the logs against each other in the pocket. Overhead water jets spray the logs to wash off the loosened bark. The bark is drawn off, drained over a screen, and conveyed to a burner or to storage for other purposes.

This barker is usually operated by a crew of three: one feeding logs to the log haul, one controlling the infeed rolls to keep the hopper filled, and one controlling the kickers. The chains have a tendency to bring logs up from the hopper but these are watched by the kicker operator and are mechanically kicked off the chain dogs back into the hopper. The kickers are withdrawn for clean logs so the logs can pass up and out to the discharge chute. The barker is not too well adapted to short and small diameter logs as logs under 10 feet in length and 5 inches in diameter have a tendency to jam and break.

Another type of friction barker which has been developed to remove bark from logs completely without waste or damage to the wood is the chain barker. These barkers are usually of two size classes: one for use on small logs and posts up to 6" diameter, and the other for logs up to 24" diameter. End use is a primary consideration as these barkers remove only the bark with no solid wood loss.

In one of the smaller machines a single operator holds the small log or post at one end to rest it on an idler roll and by pressing down on the held end, forces the free end against a rotating cylinder of chains. The friction of the chains removes the bark as the log or posts is rotated and drawn back and forth. After about one-half the log or post has been barked, it is turned end for end and the operation is repeated. The weight and size of the individual log to be barked is the determining factor, but logs up to eight inches in diameter and up to seven feet in length have been barked on this machine.

In another chain barker chains stretched across a rotating wheel are wrapped around the log as it is fed, without rotation, through the wheel. The wheel rotation causes the chains to wear through the bark to the wood and feeding the log without rotation causes the bark to peel off in strings. A few inches of the log may be left unbarked in this barker because the chain must be opened when a new log enters and a space of a few inches may be covered before the chains are reclamped. This barker peels even crooked logs without damage and removes bark around knots and rough wood.

Another popular chain barker oper-

NO NEED TO RESET SAW

for second operation

Swivel action gives proper bevel to each tooth

WARDWELL Y-18 Cross Cut & Rip Circular Saw Filer

It is not necessary to reset saw during sharpening. All teeth are sharpened and beveled in one continuous operation. Sharp edges, true bevel and balanced points. No other sharpener has this patented swivel action. No other sharpener sharpens each tooth as it comes along. Write for Bulletin on Y18 Circular Cross cut and rip saw filer.

AC 38 SETTING MACHINE

Sets circular saws from 5" to 38" diameter. Automatic; speed 150 to 200 teeth per minute.

The WARDWELL Mfg. Co.

3161 FULTON RD. CLEVELAND 9, OHIO

ates to remove the bark by a system of four chains suspended between two rotating drums. Both drums rotate in the same direction and while they are rotating, their position relative to each other may be changed to tighten up or to open the chains by means of a planetary gear box and locking device under push button control.

These friction barkers are generally used where solid wood waste is a primary consideration, as in the pulpwood industry, as the bark is peeled off the log without removing any of the wood. Large drum friction barkers are often used to process sawlogs before sawing where the slabs and edging can be chipped for pulp and symmetry and finish is a secondary consideration.

Impact or Hammer Barkers

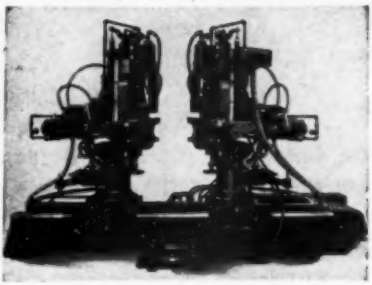
Impact or hammer barkers operate to destroy the cambium bond between the bark and wood and beat or flail the bark off the log. They are most popularly used for peeling fence posts and pulpwood and are especially suited where treatment with preservative is required as they remove both outer and inner bark. Very little damage is done to the wood itself.

Although they may differ somewhat in design and construction, the operation of most of the hammer barkers is quite similar to the barker developed primarily for use with pulpwood. In this barker the log is rotated and passed between three sets of rolls: an idler roll, a power-driven roll carrying series of small pivoted hammers that strike the bark tangentially, and a powered feed roll that is set at an angle to feed and rotate the log. The driven feed roll angle may be changed to vary the speed of feed.

The throw of the hammers is also adjustable to suit varying thicknesses of bark. These hammers are usually set to strike at a rate of about 36,000 times

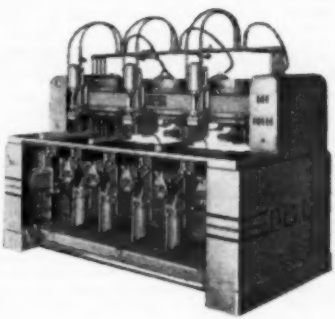
For Fast, Precision, Low Cost BORING

DOUBLE-END SAWING, BORING and CHUCKING MACHINE



For manufacturers making chairs, radio cabinets, parlor frames, tables, bedroom or other furniture—this Bell 24 is a top-flight money-maker. Saws and bores or saws and chucks both ends at once, as high as 1500 per hour when fed two pieces at a time—or 750 to 1000, one piece at a time. In addition to speed, the work is done accurately — assembly goes faster, spoilage is minimized. Set-ups average about 20 minutes.

No. 100 POST BORER



The No. 100 Front or Back Post Borer also can take costs for a nose-dive with speeds of 600 to 750 back posts per hour—each post is completely bored, *all* holes at once, in one operation. Here, too, accurate alignment of all holes pays a bonus profit. Set-up time averages 18 to 22 minutes.

Write for detailed specifications.

THE BELL MACHINE COMPANY
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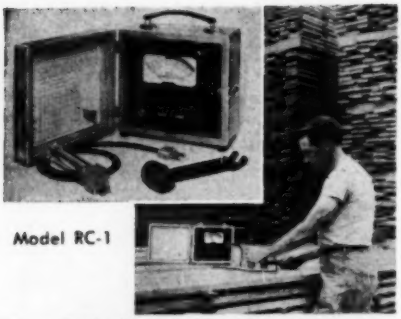
BELL WOODWORKING MACHINERY



Model RC-1

How Delmhorst Moisture Detector "has paid for itself several times"

. . . Texarkana Lumber & Supply Company tells of Moisture Detector benefits:

"We have been using your moisture detector both inside and outside of our dry kiln. By determining the moisture content of the lumber before planing, we are able to prevent the stock from bluing or molding in the bins after the stock is stored in the finish sheds. In this way the instrument has paid for itself several times.

"Also at times the moisture content of lumber is required on certain orders to be not over a certain amount. By using the moisture detector to determine the content of the lumber before delivery, we do not take the chance of delivering the lumber and having it rejected because of excessive moisture content.

"Again, many times the moisture content of lumber is a source of disagreement over a sale. We have found the moisture detector an excellent way to settle such disagreements.

"We can recommend this instrument highly and have found it to be satisfactory and accurate in every way."

Moisture Detector Features

Your business, too, can profit with a Delmhorst Moisture Detector. Use it to quickly determine moisture content of *any wood product* —there are no calculations to make—no conversion tables required—merely read the precise percentage of moisture content (within 6-65%) *direct* from the dial!

10 Day Free Trial

Fill in the coupon for complete information. Or send for a Delmhorst Moisture Detector on 10 days free trial—at no obligation. *Mail the coupon today.*

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City and State .....

per minute but their speed may be adjusted to suit the species and condition of the wood by means of a two-speed clutch and a governor on the motor. A skilled operator is required for this machine to prevent fiber breakage and wood loss at the ends of the log and around surface irregularities and protrusions.

The power required to operate the hammer barker is about 30 h.p. and its operation requires from five to eight men, depending upon the size of the logs and speed of the operation. In production operations three men are usually required to feed logs to the barker on a roller conveyor, one man operates the machine, three men are required to remove the logs from discharge rollers for piling, and another man keeps the bark disposal conveyor cleared.

Besides attending to the machine in operation, the operator is required to set the hammers for each size of log, adjust the pressure to suit the tightness of the bark, and regulate the speed of feed to suit the condition of the wood. The efficiency of the barker is directly dependent upon his knowledge and skill in adjusting and operating the machine.

A regular production crew can peel from 2,000 to 3,000 small logs or posts per day, or an average of about 7 cords of pulpwood per hour. Reports have been received which show production as high as 60 cords in an eight hour day. This hammer barker has rated capacity to take logs from 3" to 12" in diameter and up to 8' in length.

Other types of impact barkers operate with tight and slack chains which bark the logs by beating or flailing the bark off. One that is used quite extensively is a small portable machine in which short lengths of hardened chain are fastened to the edges and center of a

metal spool. These chains are slack until the spool is rotated when they fly out to form two flailing or striking surfaces which beat off the bark as the log is fed over rollers and is rotated manually against their beating action.

The spool usually rotates at a speed of about 7,000 r.p.m. and this rotational speed causes each flying chain to be formed into two striking surfaces extending out from the edges and center tie. Power for this small portable barker is usually provided by a 3 h.p. to 6 h.p. gasoline motor. Its efficiency in operation is dependent upon the care and judgement of the operator. Production ranges from 300 to 400 logs per day, depending upon the season, size of the log, wood species, and tightness of the bark. It barks softwood and hardwood equally well in spring and summer but hardwood is too difficult to bark in the winter for practical purposes. This slack chain barker is chiefly used for peeling fence posts.

(To Be Continued)

Ammunition Box Hardware

If your contracts call for hardware for ammunition boxes like that shown here, or for other ordnance equipment—save time by consulting Stanley. The largest manufacturer of hinges and hardware specialities, The Stanley Works has the "know-how" to help you develop the items you need, and the plant facilities to supply them on time.

Send us complete details of your requirements, including prints, if possible. We'll help you meet delivery commitments.

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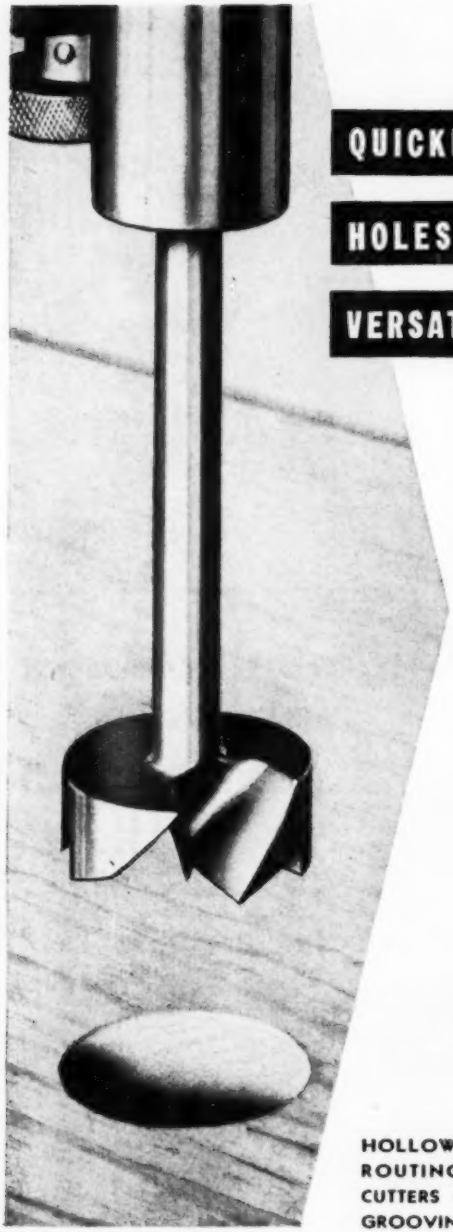
STANLEY
Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL



QUICKLY BORE SMOOTH HOLES UP TO 3" WITH THIS VERSATILE MULTI-SPUR BIT

A fast, smooth-boring bit for those special jobs beyond the scope of the usual machine bit. Bores any arc of a circle on an edge of a piece of stock. Operates well in either soft or hard woods and is often preferred for end-grain work. Smoothly bores veneered stock without tearing and will bore at an angle, overlapping, or at close centers without splitting stock. Stocked in sizes ½ to 3". Write for facts. Greenlee Tool Co., 2134 Herbert Avenue, Rockford, Illinois.

TOOLS FOR CRAFTSMEN

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HOLLOW CHISELS • MACHINE BITS • DRILLS ROUTING BITS • MULTI-SPUR BITS • PLUG CUTTERS • COUNTERSINKS • MAKERS OF TECO GROOVING TOOLS FOR TIMBER CONSTRUCTION

From ROUGH LUMBER

to FINE FURNITURE

By Frank DeYoung

In this article Frank DeYoung takes us through all of the operations at the Rway Corporation, Sheboygan, Wisconsin. Many of our readers will enjoy the details of manufacturing fine furniture. Originally this article was presented at a sectional meeting of the Forest Products Research Society and is reprinted with permission.

JUST how do we go about producing fine furniture that is acceptable to Mr. & Mrs. America?

Top management conveys to the designer their desires as to the general type of furniture our plant is capable of producing. The designer then submits a group of sketches for selection. Sketches which will have customer appeal and can be produced in our particular plant at a profit are chosen.

After selection of the sketch, the designer is authorized to make full size drawings. These full size drawings are then given to the factory where a sample piece or suite is made. Upon completion of the samples, costs are estimated; and a sales price fixed to the furniture.

Top management and the sales department then review the piece or suite and make a decision as to whether the piece or suite is worthy of a cutting in the plant. Upon acceptance of a piece or suite for production, it is sent to the factory for process.

The samples are then reviewed by a committee consisting of the factory manager, superintendent, designer, detailer and biller. This committee's duties are to study the types of woods and veneers to be used and the most economical methods of manufacturing.

A new master detail incorporating any authorized changes is now made. The master detail is given to the billing department where all items listing length, width, thickness and type of lumber are recorded on a master material bill.

The master detail is then sent to the drafting department where prints are made of each individual part. These prints are sent to the routing department and here a listing is made as to the various movements of each piece from the cut-off saw to the cabinet departments.

These prints, along with the routing instructions, are sent to the time study department where standard piece rates are applied to the routing sheet. Those piece rates not standard will be set by time study upon processing in the plant.

Orders are given to the factory as to the proper time to put this new suite cutting into work. A master billing sheet, along with the individual item drawings with their route of operation and rate sheets fixed to them, are given to the rough mill foreman. This is his signal to proceed with the cutting of the new suite.

Well you can't begin to cut a new suite without lumber so let's go back

Building No. 12, the lumber storage area which is 552' long and 110' wide.

to the yard. At our Rway plant we have what is known to us as building No. 12. This building is 552 feet long and 110 feet wide. The two sides and monitor section are ventilated by open louvers. The lowest part of this building is 25' high.

Our incoming lumber is unloaded directly from railroad cars inside the building. Our lumber is piled into stickered packages about 50" high. A fork lift truck transfers the package to its proper location within a numbered bay. Timbers are placed between each stack for the fork lift operation.

In charge of the four lumber handlers and the fork lift operator, we have our working yard foreman who scales and grades the lumber. An average of 20 to 25 thousand board feet of lumber is handled each day.

We have a home-made sticker piling rack. This rack is mounted on wheels and placed parallel to the car being unloaded. Channel irons, properly spaced, are bolted to the side of this rack. This takes the guess work out of the placement of stickers.

A question might be brought up as to the possible savings outdoor storage vs. indoor storage. We do know that when our lumber was piled on kiln cars open to the elements we did find the top layers to be cupped, checked, and warped. End checks were also deeper.

Other advantages are that our yard crew can continue to unload cars when weather is bad; demurrage and our need for finding other work to keep the men occupied are held to a minimum. There is no removing of lumber from snow banks.

We have two large kilns within the lumber storage building and a battery of ten kilns adjacent to our dry storage and rough mill. The total capacity of these kilns is over 200,000 bd. feet. All of our kilns are automatically controlled with individual reversible fans. One kiln operator is in charge of the proper drying of the lumber.

From our kilns the lumber passes into a dry storage area. This area along with the entire plant is kept humidified as nearly as possible to an E. M. C. moisture content of between 5 and 6%.

After a couple of days of dry storage, the lumber is then removed from the kiln cars, passed through a roughing

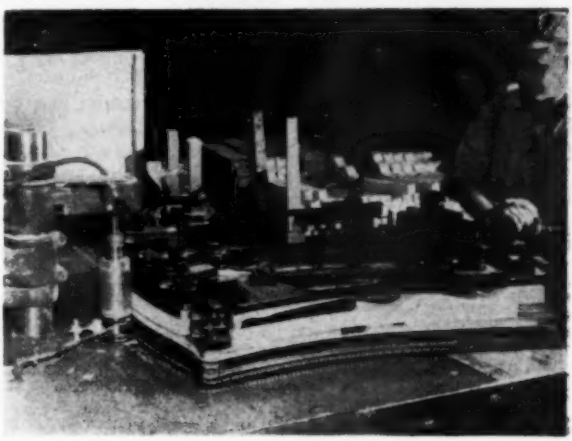
The rough mill room. The present procedures at Rway create a bank of trucks from which lumber can be selected for later operations as needed.

planer, and dead piled upon another kiln car and stored until the rough mill foreman calls for the particular kind of lumber required at the cut-off saws.

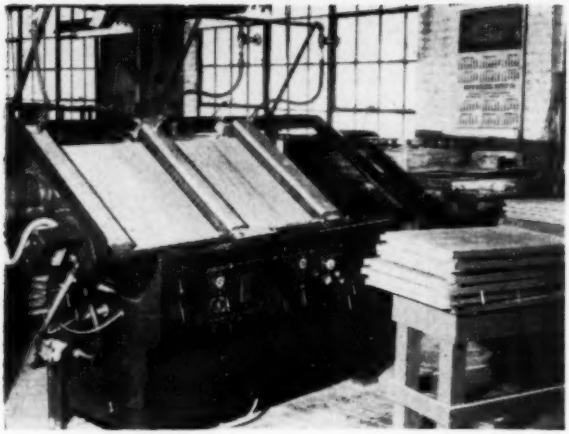
This lumber is brought to the rough mill on power-driven transfer cars; some hand pushing is required on certain cross-over areas. Our engineers hope to find some economical method to eliminate the hand pushing.

Upon entering the cut-off saw area, the operator pushes a button to level the lumber lift with the floor. Another button is pushed to move the transfer car on to the lift. Then another button is pushed to lower the lumber to its proper height. At this point the electric eyes see to it that the lumber is constantly maintained at the proper working height for the cutters.

We have a battery of four semi-automatic type cut-off saws, all operated by the touch of the toe. You will remember that we mentioned the rough planing operation. Our findings are that it greatly helps the cutters to better see the defects in the lumber and thus do a better job of cutting.



Automatic shaper in the finish mill at Rway Furniture Company.



Resistance heated, rubber covered strips are applied to wooden forms in the Rway veneer banding machines.

From our cut-off saws, the lumber is passed on a conveyor to a sorter who piles the various lengths on separate trucks. In our old cutting room layout, we passed the lumber directly from the cut-off saw upon a conveyor to the rip saws.

In our present layout, we pile the lumber upon trucks. Formerly when the cutters were having an easy bunk of lumber to cut they would overload the rippers and thus would have to slow up. At other times the cutters would work as fast as possible, and the rippers would have an easy time of it. Our present method of piling to trucks creates a bank of trucks for the rippers.

Sanding parts for Rway furniture.

We have a battery of four up-to-date rip saws and one gang rip saw. All of these saws are equipped with counters. The operators and helpers are paid on the basis of the length ripped.

From our rippers the core stock is passed on to what we call a lay up operation. Here the boards are loosely laid and ripped to a given overall width. After this sizing operation, the lumber is passed on for gluing.

Our high frequency cone gluing machine was designed by our Rway engineers. This one-man machine is the result of experience. Our previous machine was not too successful from an overall cost angle. For instance, the old machine had two high frequency tubes each at a cost of $300.00. These tubes were guaranteed for 1000 hours each. They did not last 1000 hours, as per this experience. We were sure that our tube costs alone were 60c per every operating hour. The present machine has but one tube at a cost of $500.00. This tube is still in operation,

Saddles or scoops any shape or size of chair seat.

McKNIGHT NO. 1-E

AUTOMATIC SADDLE SEAT MACHINE

SIX TO TEN SEATS PER MINUTE

CONTINUOUS PRODUCTION HOPPER FEED

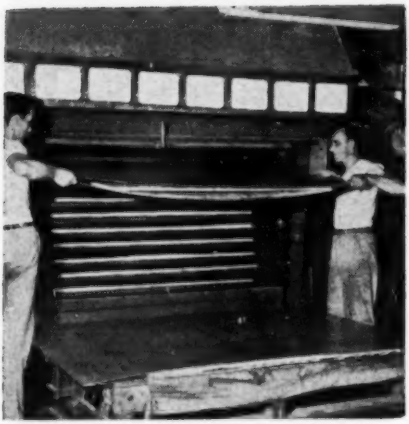
The McKnight No. 1-E Saddle Seat Machine cuts six, eight or ten seats per minute. It is the highest speed and most efficient saddle seat machine manufactured. Stock is carried from the hopper to the cutting head by a steel chain. Motor, 10 HP, 3600 R.P.M., ball bearing type. Cutting Head runs at 5000 R.P.M., is mounted in ball bearings. *Write for further details.*

Manufacturers of Combination Horizontal and Vertical Boring Machines — Trimming, Chucking & Boring Machines — Single Drum Sanding Machines — Corner Block Machines — Chair Clamps — Notching Machines — Single End Tenoners — Bending Equipment (including Steam Boxes, Pumps, Benders) — Mortisers.

McKnight Machinery Company

Chair and Woodworking Machinery

GARDNER, MASSACHUSETTS, U. S. A.



Ten opening hot press being loaded.

and the cost is down to less than 15c per operating hour.

One man places the lumber upon a conveyor belt where it is automatically glued, then we lay up in panel size, and push it into the machine. The finished panels are placed upon a truck.

Our core panels are put in a properly ventilated and humidified conditioning room for not less than 48 hours.

Preliminary tests of moisture samples indicated that further drying of glue lines on a high frequency resin cured panel was unnecessary. However, production runs proved that some uneven surfaces could be traced to improperly dried glue lines. We now cure the panels in our drying room.

I have in my office some 50 table tops made up with various types of core lumber; some with selected edge grained lumber; some with alternate edge and flat grained lumber; some of these panels were animal glued, while others are resin glued; some were sent to the conditioning room; others were not. Photographs were taken of all the cores and the crossbanding veneers. These panels were made some 9 months ago properly sanded, finished, and rubbed. Once a month these panels are inspected for defects whether sunken joints, raised boards, defective cores, or crossbanding.

A record is being kept of these panels, and we do hope to have some answers as to what procedure to follow in the making of high quality stock. I am sorry to say that we do not have in this group any panels with a 1/10" tempered Masonite crossband. We feel that this might have merit in that the Masonite is bound to be more uniform than crossbanding with its hard and soft spots which transfer themselves through a highly polished table top.

We now come to the veneer department. Purchased face veneers and crossbanding are processed through the clippers, redrier, veneer jointer, tapeless splicing machines, and on to the inspectors. Our inspectors check all glued up face veneer sheets throwing out patching, or taping, whenever necessary.

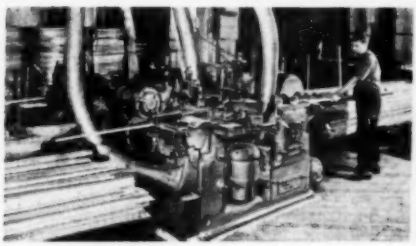
We now group the proper cores, crossbanding and face veneers at the resin glue machine. The crossbands are passed through the resin glue

Five conveyors are used in the finishing room. Finishes are delivered to the various spray booths through a piping system from a central distributing station.

Proof of our Point . . .

"NEW MACHINERY IS A GOOD INVESTMENT"

. . . as these satisfied users testify!



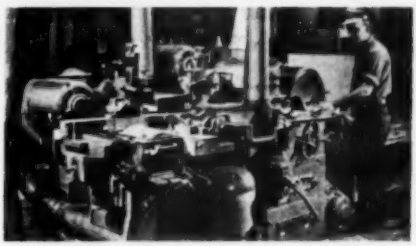
CARR & MOEHL COMPANY

Carr & Moehl Company, Des Moines, Iowa, have this to say about their ECCo No. 464 – (6"):

"... ease of set-up increased production of detailed mouldings"

"... sanding operation cut in half due to excellent surface finish provided by ECCo Moulder"

"... installation has resulted in doing almost same amount of work with single machine as averaged before with two older 6" moulders"



EBENREITER LUMBER CO.

Ebenreiter Lumber Company, Sheboygan, Wisconsin finds that their new ECCo No. 466-(8") does a good job for them.

"... design and accessibility permits as many as 15 to 16 setups a day"

"... machine has proved to be most worthwhile investment – volume increased tremendously and quality improved at minimum operating expense"

"... ECCo Moulder enables handling our doubled sales volume with absolutely no overtime on moulder"

EKSTROM, CARLSON HI-SPEED MOULDERS

Reduce Costs...

The above excerpts from customers' letters are mighty sound evidence that an investment in new machinery *does* pay off in reduced costs and improved production. Perhaps if you make an analysis of your set-up, you will find need for new ECCo Hi-Speed Moulders as they apply to your operation. Remember, too, that savings made possible with new equipment help to pay for your investment within a very reasonable length of time.

Improve Products...

These job-proved machines have cutter speeds adjustable from 3600 rpm to 7200 rpm *without use of frequency changers.* Feed rate is quickly and continuously adjustable between 25 and 225 fpm. And, jointing of cutter heads for high speed work is a comparatively easy operation. Such benefits as greater accuracy and uniformity, better quality, and reduced costs can result from the installation of new ECCo equipment in your plant.

Send for Descriptive Literature

EKSTROM, CARLSON & CO. ECCO **1411 RAILROAD AVE., ROCKFORD, ILL.**

MOULDERS • SANDERS • ROUTERS • SHAPERS CARVERS • PANEL SIZERS • GROOVERS

Each piece of furniture is carefully inspected and touched up if necessary.

spreader which is properly adjusted to produce the desired even spread of resin glue.

The stacker then places these glued crossbands along with the face veneer, back veneer, and the core upon a roller conveyor. When the proper amount of panels for a press load are completed, the pile is pushed along to the press operator and his helper. The press operator checks the size so as to determine the proper press pressure and the time required for the cure. Our ten opening hot press is then loaded, a button pressed, and the press is closed. An automatic timer on the press releases the pressure and the operators then unload the press ready for the next charge.

Along with this hot press, we also have a cold press. Here we glue up our non-standard sweep or serpentine drawer fronts, blocks, etc. After pressure is applied, retainer clamps are used so that the stock will be kept under pressure until the resin glue is properly set.

We also have a high frequency veneer press. All of our so called standard sweeps are made up with laminates of ⅛" rotary cut veneers along with the crossbands, face and back veneers.

Sometime ago we did analyze our costs as to which is the better and most economical way of making up these curved surfaces. Our findings were that there was a slight saving in the use of the laminated stock, as against the lumber block which has to be bandsawed and veneer glued in the cold press. We also find that if the form is properly made, our bent surfaces are much more uniform than in the past.

The finish mill is equipped with what we think is the best in woodworking machinery, such as automatic shapers, multiple automatic or semi-automatic boring and cut-off machines.

If we cannot find the proper kind of equipment for some special operation, we bring the problem to our staff of Rway engineers. They study the problem and usually come through with an answer.

Our engineering department also supplies the machine department with boring templates and checking gauges. These templates are used in the setup of the boring machines. After a part has been bored, it is again checked with the template.

A question is often asked as to how close do you hold your dimensional tolerances in the plant. I could tell you that we hold them to less than 1/32 of an inch—1/32 of an inch would be intolerable if, let's say, it left a chair joint open to that extent. At another time you could measure the overall length of a credenza buffet and might find the overall length to be ⅛" longer than specified. Let's find out why.

A credenza buffet has two outside and two inside ends which are planed to, let's say, a plus .005 of an inch, 4 x .005 = .020 thousandths of an inch.

IT TAKES ONLY ONE SET OF SHIMER HEADS for

Flooring

Wainscoting

Siding

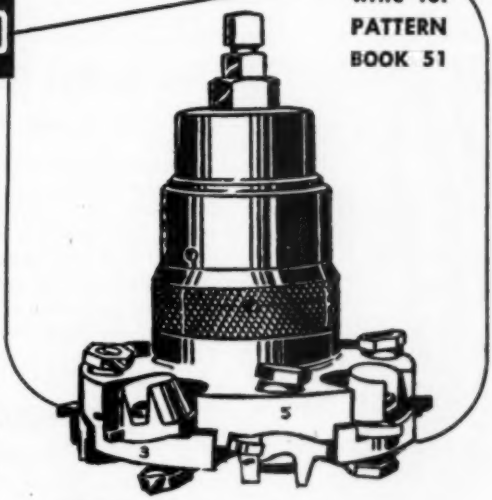
Ceiling

SHIMER

MATCHER HEAD

write for PATTERN BOOK 51

- **SELF CENTERING** avoids set-screw failure . . . centers head for perfect cut and true balance!
- **QUICK CHANGES** from thick-to-thin cuts or pattern-to-pattern!
- **CIRCULAR BITS** outwear conventional straight type, are easy, quick to sharpen!



Manufacturers Of The THE SHIMER CUTTER HEAD Shimer Cutter Heads

SAMUEL J. SHIMER & SONS, Inc.

MILTON, PENNA.

Then we have 16 layers of veneer on these four ends. 16 x A plus of .004 thousandths equals .064 thousandths. Then we have three lengths of partition frames and each might be .015 of an inch plus. Add these all up and you have a plus of about ⅛". Now let's make the base separately and we could find it to be 1/32 of an inch shorter than the print. We are then in trouble as the base won't fit the case.

As per this possible example, you can bear with us that we do have problems and oftentimes find that when two separate sections, such as the base to the case do require us to machine some pieces to fit others.

All of our stock is rough sanded at the edger or belt sanding machines with either a 2 or 3-0 sand paper. Following this operation, all of the stock is sponged so as to raise bruises and the grain. After the stock has been thoroughly dried, a final sanding operation is given using grits anywhere from 3-0 up to 6-0, depending upon the type of stock or veneer being sanded.

Following the sanding operation some of the stock is sent to what we call our preliminary department. Here mouldings, carvings, etc., are applied to the surfaces.

In this department we have a battery of Rway banding machines. These machines are used in the banding of veneers to the edges of tops, partition frames, etc. Resin glue is used in the bonding of these veneers. We have resistance heated, rubber covered strips which can be applied to a wooden form. It did take some research work on the part of our New York chemical engineer to find the proper type of rubber which would stand up under the heat. Our patternmaker makes the form, and we are ready to edge band a new

Tops in High Speed Heavy-Duty Service for Bandsawing

Speed production, save saws, cut material loss and lower costs—with Carter Rigid Wheels and Quick Change Tires. Tires won't throw even at 1800 R.P.M. Mounted like automobile tires and rims. Changed in 10 min. Tires will outwear 3 or 4 of other makes. Available for 30 or 36-inch machines with any type of hub or bearing—either as standard equipment on new machines or for modernizing obsolete equipment.

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CARTER PRODUCTS COMPANY, INC.

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Grand Rapids 2, Michigan

The Band Saw you NEED in YOUR shop!

New DURO 15" Model offers a capacity to handle large work with greater dependability and accuracy

This 15" heavy duty Band Saw is an outstanding Duro development. Solid, precision built for years of quiet, efficient service, it will "cut corners" and costs on many woodworking operations. Only Duro offers these outstanding features: Sturdy cast iron one piece frame construction includes heavy ribs that give a solid, vibration-free foundation; ball bearing blade guides above and below table keep blade running truer and smoother; double trunnion table supports; balanced disc wheels; roller type bearings. Work table tilts to 45°; has built-in light; one piece guard covers both wheels; unlocks easily, allows operator to check blade tension and tracking quickly, safely. Also permits easier blade changing. Can be used for metal cutting with special converter. There's a Duro Band Saw for every purpose in 10", 12", 15" and 16" models.

WRITE FOR DETAILS

Write today for full details and specifications on this improved 15" Band Saw, as well as the latest brochure on the complete line of precision power tools. It's FREE—write today.

SEND FOR NEW PROJECT MAGAZINE

For the beginner or advanced craftsman. Refreshingly new material — with photographs, plan drawings, step-by-step instructions that anyone can follow easily. Send 25c for sample copy or you can save ⅓ and get 6 issues for only $1. Either way we'll refund your money if not satisfied. Write today!

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ALSO MAKERS OF
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DURO METAL PRODUCTS CO.
2691 No. Kildare Ave., Chicago 39, Ill.

Please send me full details and prices on your improved 15" Band Saw and brochure on your complete line of power tools.

☐ I enclose 25c for sample copy of The Duro Crafter
☐ I enclose $1 for 6 full issues of The Duro Crafter

Name_____

Address_____

City_____ Zone_____ State_____

top, frame, or any edge banded contour.

Following the preliminary department we have a thorough inspection of all parts. Rejected parts can often be repaired at a lesser cost than to make up new ones. These parts are then sent to our cabinet repair department where they are put back into usable condition. All previous operators are cautioned to throw out pieces that do not warrant further machining operations. Our billing department is on the watch when additional stock is called for to complete a cutting. Through their experience they call for various amounts of overrun when making up the cutting sheets for the rough mill.

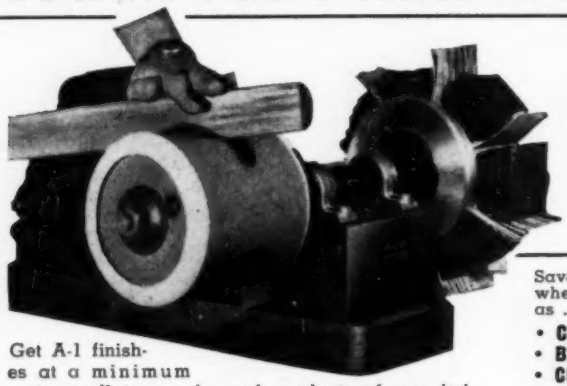
Our assembly departments are divided into four separate sections. These are the chair cabinet, table cabinet, bed cabinet, and case cabinet.

The case cabinet department is the largest of the group. In this department we have the end, drawer, and case assemblers. From the case assemblers we have a group of men that add certain parts or sections such as the base or deck to the case, etc.

Following this operation, the case is put upon the cabinet conveyor. The first operation is the selection of prenumbered matched sets of drawers and doors which are put into the case. The next operation is the fitting of drawers and doors which are done on specially built edge sanding machines. Next is the removal of glue from the drawers and softening of edges. The next operation is the hanging of doors. Next, the placement of drawer guides and stop blocks for the drawers and last the installation of the case backs.

The cases now travel to the rough inspection station. This inspector checks for improperly operating draw-

LOWER YOUR SANDING COSTS!



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Get A-1 finishes at a minimum cost on all types of wood products of rounded contour and irregular shape.

Save time and materials when you sand such items as . . .

- CHAIR LEGS & ARMS
- BRUSH HANDLES
- CHAIR SEATS
- GUN STOCKS
- FURNITURE TRIM
- MOULDINGS

WRITE TODAY FOR CIRCULAR

SAND-RITE MFG. CO.

Dept. W., 226 W. Schiller St.
Chicago 10, Illinois

THREE REASONS WHY

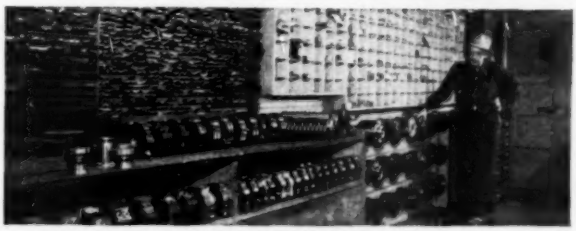
leading milling plants prefer—

DISSTON *Philbrick* CUTTER HEADS

1 MUTUAL MOULDING

prefers them for *quality!*

Mutual Moulding is one of the oldest custom milling plants in Los Angeles. Owner Si Hannon has been milling lumber since 1916—and he really knows cutter heads. "I've found Disston Philbrick Cutter Heads *the best*," he says.



Owner Si Hannon of Mutual Moulding, Los Angeles, Calif. This plant has more than 80 Disston Philbrick Heads.

2 VEACH-MAY-WILSON

prefers them for *economy!*

Wade Headrick, Hardwood Flooring Superintendent of Veach-May-Wilson, Inc., Alcoa, Tenn. says: "Disston Heads are real money savers. Cutters last longer and need less frequent resharpening. They save on downtime, labor, cost of cutters, and even cost of grinding wheels."

Fred Headrick, Set-Up Man at Veach-May-Wilson.

3 WEYERHAEUSER

prefers them for *production*

At Weyerhaeuser's Snoqualmie Falls, Wash. plant Disston Philbrick Cutter Heads meet top production schedules. On one machine, a Disston 14-Knife Generated Type Head cuts a 2" eased edge on 2"x4" at 850 lineal feet a minute!

Disston Philbrick-equipped machine at Weyerhaeuser.

For high production . . . better quality output . . . and real economy, equip your machine with Disston Philbrick Cutter Heads.

DISSTON *Philbrick*® CUTTER HEADS

Generated Type (milled to pattern)

produce more—more efficiently!

- **Precision lapped and ground center holes mean heads run true.**
- **Dynamically balanced, smoother running.**
- **Knife changes are quick and simple—no holders, clamps, or gibs.**
- **Chip breakers are ground into cutters—no chip wear on heads.**
- **Greater throat room — easier pulling heads, no loading up, no chip marks.**
- **Head bodies made of special heat-treated alloy steel. Exclusive Knife-and-Head designs permit faster feeds and heavier cuts.**

DISSTON "CUTTING ANGLES," a new service bulletin contains information on cutting costs in planing mills. Write for it. Also, FREE wall chart showing standard woodworking patterns.

DISSTON THIN PLANER KNIVES: Stays sharp longer between grinds; balanced in pairs or sets.

FIGHT WASTE

"SCRAP TURNED IN ...IS STEEL TURNED OUT!"

Steel mills urgently need more scrap now. Keep your steel scrap moving into channels serving steel mills.

HENRY DISSTON & SONS, INC. 495 Tacony, Philadelphia 35, Pa., U.S.A.

Pacific Coast Factory: Seattle, Wash. Canadian Factory: Toronto 3, Ont.

ers, a loose hinge or some operation that could not be done due to the speed of the conveyor. The repair cases pass on to the repair operators while the others go to the hand sanders. These hand sanders go over the entire case with fine sandpaper. Another inspector now inspects the case and if approved it is passed into what is known as white stock. Our chair, table, and bed cabinet departments also have their final inspections before passing into the white stock area.

Our finishing foreman receives his finishing orders from the main office. It is seldom that we finish an entire cutting of white stock; we must hold some of the white stock so that we have it on hand for customer specials. Our type of furniture does require that we cater to the special tastes of our customers.

We have in our finishing department five separate powered conveyors.

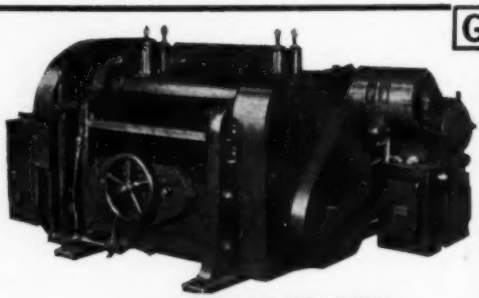
The main conveyor is an overhead type and carries about 80% of our finishing production. The other four conveyors are of the platform type. One of these last four is used for bleaching purposes only; another is used for special furniture; and the last is used for tables.

Our finishes vary from suite to suite. Planning by the foreman must be done with great care so that the desired finish is a direct result of having the right help and materials at the proper stations at a given time.

Our cabinet production produces a continuous flow of a certain number of pieces whereas the finishing department handles the furniture by suites. Placement of this furniture must be balanced by having the larger and smaller pieces equally distributed so that all work on the conveyor is well-balanced.

100 YEARS of Progress

in the development and manufacture of Woodworking Machinery assures you top quality when you purchase Goodspeed Planers.



GOODSPEED
Double Surface Planers

Capacity: Boards of full width and from ⅛" to 7" thick.
Feeds from 20 to 100 feet per minute, two feeds for each machine, according to rates of feed ordered.
8 roll type, 6" diameter feed rolls.
2 sectional infeed rolls
Sectional chip breaker
Furnished with 4 knife and 6 knife round heads mounted on ball bearings.

These Planers are made for accurate and finely finished work; plane any kind of wood on both sides in same operation. Simple in design, powerfully built for years of service with operating expense minimized by use of Anti-friction and Removable Bronze Bearings on Feed Rolls. Come in 24" — 30" — 36" widths.

Send today for free Anniversary Bulletin

GOODSPEED MACHINE COMPANY
WINCHENDON, MASSACHUSETTS

All of our lacquers are delivered to the various spray booths through a piping system from a central distributing station.

After the complete finishing cycle, the furniture is transferred directly from the finishing conveyor to the transportation conveyor. This transportation conveyor takes the furniture to our warehouse buildings.

Orders from the shipping department are given to the warehouse as to which pieces are to be moved from the warehouse via the transportation conveyor to our rubbing department. At the rubbing department the furniture is transferred from the transportation conveyor to the rubbing conveyor.

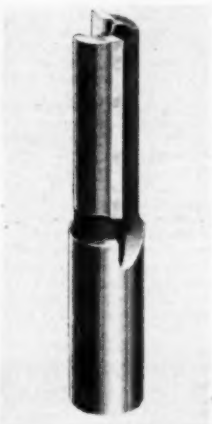
The first operation is a machine rubbing of the tops, ends, and drawer fronts. Following the machine rubbing, the furniture is taken to our hand rubbers where effort and care is given so that the entire piece is thoroughly hand rubbed. The hand rubbers now transfer the rubbed pieces back to the conveyor. The next operation is the sanding and waxing of all drawer and cupboard interiors. Following this, the piece is well-cleaned and then given a coat of Rway wax.

The next station is that of inspection where the entire piece is looked over for faulty workmanship. Following this, we come to the trimmers station. All drawer hardware, jewel trays, etc., are assembled at this station. Other ornamental hardware, such as setting of glass in doors, etc., is completed by our on-the-floor bench trimmers.

Our shipping department issues orders to the warehouse as to which pieces are required for shipment. These pieces are again placed upon the transportation conveyor and removed in the shipping department. Each piece is

O. C. E. TRIMMERS ROUTER BITS

O.C.E. Router Bit



Solve the problems encountered in working formica and other plastic covering with CARBIDE TIPPED O.C.E. Tools.

Trimmers—Fit any $\frac{1}{4}$" router spindle. Straight face for flush trimming or 10° taper for self edging.
Router Bits—Double flute $\frac{1}{4}$" to 1" cuts.

Clean, fast trimming of linoleum, plastic, veneer, etc., after gluing. No other finish necessary.

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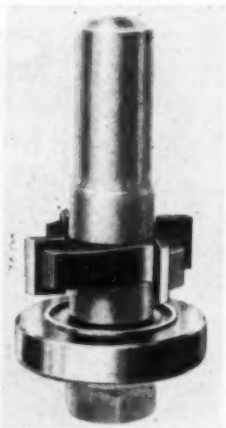


O.C.E. Trimmer and ball bearing roller guide. (Spindle not included)

thoroughly examined and touched up by our patcher inspectors. Following this, the pieces are regrouped as per customers' orders and again given an overall grouped inspection, being sure that the color, operation of drawers, doors, etc., are up to our quality standards. Following this final inspection, the furniture is placed within their designated truck loading areas.

The bulk of our furniture is transported by Rway's fleet of diesel powered trucks. The furniture is delivered to either the dealer or direct to the customer's home. It is a rare occasion that we must crate a suite of furniture to be delivered to some distant out-of-the-way place.

All of our furniture is sold by Rway authorized furniture dealers. The dealers, however, do not stock the furniture but bring or send their customers to our factory operated showfloors where each suite is tastefully displayed in individually decorated room settings. We have 15 showfloors in operation.

In closing I'd like to sum up what I believe is responsible for the success of our Rway operation.

Rway is the trademarked name of our company. Formerly we were known as the Northern Furniture Company. Rway means the Reiss way, and we at our plant have a healthy respect in that the Reiss way is the right way.

Rway is associated with the Reiss Manufacturing Corporation. Through this association, we have the full benefit of our associated company, with its consulting engineer division complete with research laboratories, chemical, electrical, and mechanical engineers, and machine department.

We at the plant are, as a whole, an organization staffed with people who have devoted their whole lives to the

Resawing . . . 1/10" Strips with the

McDONOUGH 44"

VERTICAL BAND RESAW

Anson-Gilkey Co. of Merrill, Wisconsin, needed a high-speed resaw that would cut 1/10" strips, with precision accuracy and minimum kerf wastage. They specified a McDonough 44" Vertical Band Resaw . . . and got exactly what they needed!

For more than sixty years, users the world over have found that for speed, accuracy and versatility, McDonough Band Resaws cannot be equalled. There are reasons:

- Independently adjusted feed rolls
- Exclusive gear type transmission
- Accurately balanced wheels
- Knife-edge sensitive type saw strain
- Electro-filmed feed roll gears and shaft
- And many more proven design features!

For gauge, center, bevel or rip sawing of stock up to 12" wide and to a maximum depth of 25" . . . for greater dependability and top performance—*Specify a McDONOUGH 44" VERTICAL BAND RESAW!*

Write for Complete Information, TODAY!

FREE . . . Your Copy of This New Bulletin! Send For It, TODAY!

McDONOUGH MANUFACTURING CO.

WORLD'S LARGEST PRODUCER OF BAND RESAWS

1503 GALLOWAY EAU CLAIRE, WIS.

making of fine furniture. We believe that with the fine spirit of cooperation that exists within our entire organization we can continue to make fine furniture that is acceptable to Mr. and Mrs. America.

The End

HARDBOARD PANELS

A light density ¼ inch hardboard panel called Thriftwood, designed especially for general interior use such as wallboard, underlayment, built-ins and cabinet work is now being manufactured by the Forest Fiber Products Company, 316-20 Pacific Bldg., Portland 4, Oregon.

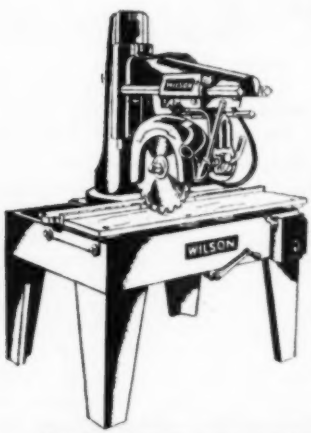
The hardboard is an all wood panel made of Douglas fir fibers which are refined, treated and welded together under heat and pressure. It has the stiffness and strength necessary for interior wall construction and industrial and fabrication purposes and is easily sawed, nailed, planed and glued the same as wood.

Other advantages of the board are finishing, hard-wearing surface and ease of application. Standard panel sizes of 4' x 4', 4' x 6' and 4' x 8' are available at Forest Hardboard distributors throughout the country.

PREFABRICATED UNITS

The trend toward prefabricated units to speed home construction has taken another step forward with the recent release of a completely packaged Hasko "Ready Hung" door and frame manufactured by the Haskelite Manufacturing Corporation of Grand Rapids, Mich.

Kitchen, telephone, medicine, ironing board cabinets and packaged windows have already gained wide acceptance in the building trade. Now, with this unit, faster completion, higher quality construction and lower costs are made available to the builder for door openings.



For The TIMES AHEAD . . . .

Money Invested in A

WILSON RADIAL CUTTING MACHINE

Is Insurance of ENDURANCE

A rugged, dependable, fast machine of more than a thousand uses

Compound Mitering - Cross Cutting Rabbeting - Dadoing - Ripping - Shaping Fluting - Ploughing and many more operations are possible using this versatile machine. Write for further details.

Immediate Delivery on 2 to 7½ HP

A STURDY SAW MADE TO MAKE MONEY FOR YOU

WILSON SAW DIVISION

MEDIA MACHINE WORKS, INC.

Est. 1922

644 Park Ave., Media, Pennsylvania, U.S.A.

Conservation of SPECIES

Through Proper SELECTION

This month West Coast species are presented. Mr. Arthur W. Priaulx, Director of Public Relations, West Coast Lumbermen's Association, discusses increased demand for lower grades of lumber.

Arthur W. Priaulx

CONSERVATION is more than just an idle phrase out here where the mighty Douglas fir, the all-purpose West Coast hemlock, the time-resistant Western red cedar and the marvelous-textured Sitka spruce trees reach their maximum and optimum size, strength and virility.

Conservation is wise use. In late years it has come to mean more complete use or maximum use of all sound portions of trees cut and logs brought into factories.

There has been a revolution here in the West Coast in the past decade in the approach of manufacturers to wood handling and wood values.

In that revolution lies opportunity for wood-using industries all over the nation, because it has made available additional quantities of our four West Coast species. It has made available, as well, cheaper industrial lumber for those who will make their wood needs fit into what is readily available in quantity at West Coast sawmills.

All this conservation is tied to economics. Stumpage prices have risen since 1940. Manufacturers have been forced to get every bit of value out of every log in order to come out with any profit. Many logs are being brought in from the woods today which were considered culls in 1940. The reason we can bring them in is that we have been able to develop a demand for lower grades of lumber which this type of log makes.

Now, this increased demand for lower grades, our so-called economy grades of lumber, is not merely by chance. West Coast mills spent tens of thousands of dollars in advertising in the nation's major magazines, distributed a million pieces of full-color literature, completed two colored motion pictures and for a time poured all the resources of their industry into promoting acceptance of these economy and utility grades of West Coast woods. The response has been enough to amaze even the most optimistic of the sales managers who

can remember when No. 2, 3 and 4 lumber was mighty hard to sell. Most mills out here have had substantial order files for these lower grades since this program to interest consumers in using the right grade of lumber for every use was developed back in 1945. The low cost appeal for the lower grades was attractive. It was even more attractive when the customer learned that for many purposes lower grades were just as good as more expensive and better grades of lumber.

From a conservation viewpoint, this opening up of markets for lower grades has created a phenomenal situation here in the West Coast Douglas fir region. We have discovered another 125 billion feet of wood in our forests that economically didn't exist in 1940. Why? Because we have made markets for the material which lower grade logs, marginal logs, short logs and chunks will make. Granted, we got a boost from the pulp industry which has developed technical know-how to the point that they can use small logs, slabs, chunks which they couldn't handle in past years.

Most industrial users of wood are familiar with Douglas fir, West Coast hemlock, Western red cedar and Sitka spruce. These four species offer the wood-using industry a wide variety of special qualities, textures from soft cedar to hard fir and hemlock, natural grains of great beauty, strength, flexibility, adaptability.

It would pay every industrial wood user in these changing times to make a complete survey of what is available from these four West Coast species. Especially, it would pay them to learn what surpluses accumulate out here in the west when the volume of lower grade logs manufactured is increased.

Here are the bargain basement offerings of these four species. A good many mills report a steady available quantity of lower grades of shop and common lumber in Douglas fir and West Coast hemlock and smaller amounts of Western red cedar. Most mills doing a good conservation job are offering short length lumber under eight feet at economy prices. This can be bought in regular commercial sizes. To get the best utilization of logs now coming to the mills, some manufacturers would like to get customers for short clear cutting, also short common. There is considerable business for short cuttings in special sizes, but the trouble is this short stock accumulates in regular commercial sizes in the process of manufacture as mills attempt to save all possible sound wood.

Hemlock shop can be bought out here at a good many mills and is gradually coming into its own as one of the most versatile of shop lumbers. It has taken a long time for industrial users to discover that West Coast hemlock is an entirely different species than eastern hemlock. The western hemlock species is one of the finest softwoods.

Lower grades of shop and common lumber, end-product of this stepped-up conservation program here in the rain forests of the Douglas fir belt, offer by far the greatest opportunities for bargains. Lower grades of shop and common fir and hemlock will yield a high percentage of clear items in shorter lengths when run through a cut-up plant, enough to warrant consideration for many uses. The recovery of clear items can be made economically. All this is good conservation through full use of the clear wood in lower grade pieces.

Here are suggestions where these bargain basement purchases of West Coast species can be used to advantage in industry.

Douglas fir: Lower grades of shop and common and short-length lumber is a natural for toy makers, furniture

factories, woodenware, kitchen appliances like ironing boards, shutters, battery separators, Venetian blinds, built-ins, ladders, boxes, pickets, sash and door, moulding, molds, wood pipe, screens, trellises. Those are enough suggestions to bring to mind many more possibilities. There is no need to mention the hundreds of other uses for this most popular of all American species, such as for truck bodies, gutters, fixtures of all kinds, interior trim of all kinds. This species has a high stress factor, has a beautiful grain, works easily, has durability and comparative freedom from warping, cupping or twisting.

An important point to make here is the matter of supply. We have had industrial users ask how long these items can be supplied. How long, how many more years will they be able to buy Douglas fir and the other West Coast species? The answer is forever. Yes, forever, for forests are growing out here at a rate very close to what we are using and forest practices and better management is increasing by leaps and bounds every year. So, don't worry about future supply. You'll always be able to buy our species. You can help lengthen this supply, however, by buying the end-product of improved conservation, the lower grades of shop and common and short lengths.

West Coast hemlock: Hemlock shop and lower grades of common as well as short-length lumber offer a fine range of potential uses to the industrial wood processor. Here is the darling of the workmen whose job it is to put wood through the shop. It shapes and forms easily, but stays put and does not come and go with the weather like some of the softer wood species. It is a tougher wood when finished. Hemlock is light weight and provides a finely finished product.

Here are a few suggestions where hemlock will fill the bill and these will bring to mind many places where hemlock from this region will bring profits to the industrial wood user. Furniture making is a top use, for hemlock can be finshed with ease and its grain is beautiful. It makes fine ladders, toys, cabinets, aircraft lumber, paneling, interior finish and trim, flooring, sash and door. It has a high strength ratio to weight and is nonresinous. Some manufacturers buy hemlock select shop for drawer fronts and for appearance jobs and then buy lower grades for the bulk of their cuts.

Western red cedar: Here is one of the country's most remarkable woods. It's outstanding feature is its durability and resistance to insects and decay and it has virtually no shrinkage. The wood is light in weight, easily worked and rather soft. It is in great demand as a specialty wood by manufacturers who know its qualities. It has a reddish cast and fine grain and finishes beautifully. It is widely used in boat building, flumes, screen and storm windows, beehives, storage tanks where liquids are held, troughs, mud sills, racing shells. It has many friends among luggage manufacturers, toy builders and lightweight specialty makers.

Cedar is cut exclusively by several manufacturers out here, and as logs accumulate, by a hundred or more mills whose major output is in fir and hemlock. Industrial users would do well to learn what items of cedar accumulate, such as shop and low-grade common. These items can generally be bought to advantage, but again the industrial user would make money by learning something about his supply sources. Makers of trellis stock, suitcases and fence companies pick up much of the lower grade items.

Sitka spruce: Is one of the strongest natural substances for its weight. The wood is light in weight and has a

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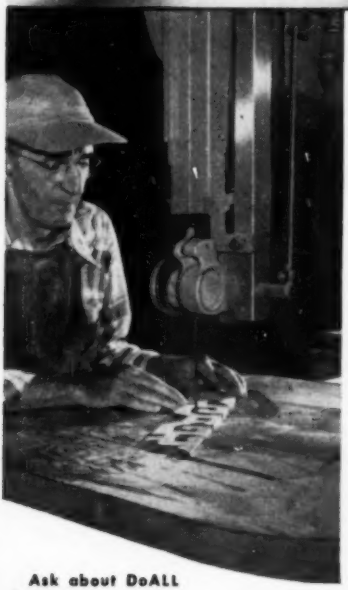

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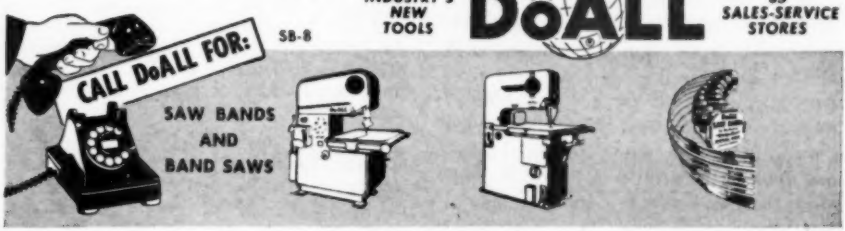

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moderate degree of toughness, hardness and stiffness. It is favored as an aircraft lumber, because it can be obtained in clear, straight-grained pieces of large size. The wood is odorless and tasteless, so is ideal for food containers. It is the least plentiful of the four West Coast woods and is manufactured by only a few sawmills. It is in demand for ladders, woodenware, kitchenware and because it works easily and has a fine texture, is a premier shop lumber.

We would like to urge industrial users of wood to visit West Coast sawmills. If this is impossible, then write for all possible data on these four fine species. Too many industrial users have no idea how lumber is cut when they specify. The result is that they sometimes are buying odd sizes and paying a premium price when standard sizes and dimensions would do the job. Take your lumber company sales manager into your confidence. Tell him what you want to use the lumber for. Ask his advice on species, on sizes and grades.

The End

C. A. NORGREN HAS NEW PLANT

The new home of the C. A. Norgren Co., pneumatic products manufacturer at Englewood, Colorado was formally opened to the public late in February.

Behind its beautifully designed and constructed front elevation of red Boulder sandstone and non-reflecting, polished plate glass is a plant area of more than two and one-half times the old structure. Total area of the new building is more than 60,000 square feet. The production sector is laid out on a flow plan and integrates two complete manufacturing divisions — machining and assembly.

In effecting the overall production efficiency, some of the important features are: improved material handling procedures, numerous new production machines and modern illumination throughout. A specially designed carton chute from an overhead stock area to the packing benches is a new and outstanding feature.

A unique beauty feature of the new plant is the magnificient 100-mile wide panorama view of the Rocky Mountains that is seen from the flagstone patio at the entrance to the plant.

NEW OFFICE AND WAREHOUSE

The Rohm & Haas Company, Philadelphia, Pa., has announced the opening of new office and warehouse facilities in Charlotte, North Carolina. Officials report that the new installation (a single story, brick-and-steel building comprising 12,000 sq. ft. floor area) should provide greatly improved service to Atlantic and Gulf Coast consuming areas, particularly plants engaged in the manufacture of plywood, furniture, and paper.

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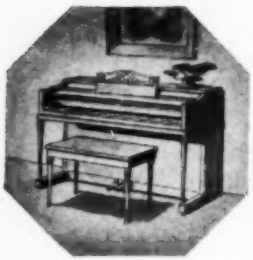

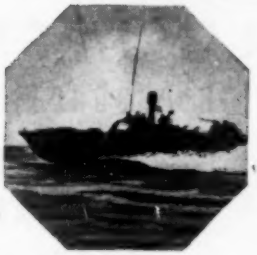

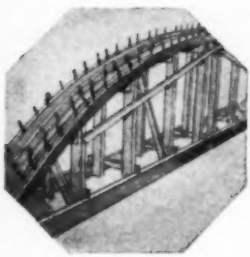

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Know your wood

SPRUCE

BY NED BAILEY

OF some 40 species of spruce throughout the world, seven are native to the United States. They range through the cooler regions of the northern hemisphere—northward to the Arctic Circle, south to Arizona and the Carolinas in North America, to the Pyrenees mountains in Europe, to the Himalayan mountains and central China in Asia, and over onto the island of Formosa. They generally prefer moist, well-drained soils.

Their pyramidal form, dense glossy foliage, pointed individual needles and pendant cones distinguish them from firs whose cones are erect and from the pines whose needle-like leaves are usually in clusters and always lack the tiny leaf pedestal. After spruce needles fall, the pedestals remain on the twig, making it rough to the touch.

Picea is the classical name of spruce. It comes from the Latin "pix" meaning pitch, which refers to the resinous flow from the bark. The pitch is a source of spruce gum and spruce beer. More significantly, it is the base from which some varnishes and medicinal compounds are derived. The name "spruce" may have come from Prussia where spruce is one of several native forest trees.

There are 11 other species of spruce growing on the North American continent besides the 7 native species, making 18 in all. Much confusion exists as to the various names they are given—due mostly to their close similarity of leaves and habits. The largest growing and native species is the Sitka spruce.

The Sitka spruce on the west coast ranks with redwood and Douglas fir as one of America's fastest growing conifers. Although it may live 8 or 9 centuries, the Sitka spruce does most of its growing in the first 100 years, reaching in some cases a height of from 200 to 300 feet and 8 to 10 feet circumference at the base. However, the average tree is 80 to 125 feet high and 3 to 6 feet in diameter. In low wet valleys and flat lands, they reach 160 to 200 feet high and diameters of 8 to 10 feet above the buttressed base. The swollen buttresses are a distinguishing mark of the Sitka spruce, also the long clean trunks and the protruding roots.

Sitka spruce is unique among American spruces, as is the weeping spruce, in that it has thick flattened leaves, four angles of which are indistinct. They grow on smooth stems and are bright bluish green, about half an inch long and keenly pointed. Dark red, pollen-bearing flowers adorn the ends of the drooping side branches in early spring. High up on stiff terminal shoots are the short-stalked, oval female cones.

The bark is either deep reddish brown or dark purple and the surface is broken into easily detached large scales about half an inch thick. Odorless

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and tasteless, the pale pinkish brown wood is soft, straight grained and light, an air dried cubic foot weighs only 25 pounds. It is easily worked, has a silky sheen when planed and is notably strong for its weight. It kiln dries nicely, shrinking or swelling only moderately.

Sitka spruce is valuable for its varied and vital uses. Airplane construction claimed some of its production during both world wars. The bulk of the hundreds of millions of board feet harvested each year is used chiefly for cooperage boxes, crates, furniture and building materials. Pulp for paper gets well over 100,000 cords a year and smaller quantities go to the piano manufacturers for piano sounding boards.

Most Sitka spruce in the U. S. is found in Washington and Oregon—an estimated 7 billion board feet. Alaska's estimate is about 18 billion and British Columbia about 15 billion board feet.

Blue spruce is best known for its ornamental beauty. Pyramid-like and symmetrical, the blue spruce in its crisp, cool, blue-green foliage and frequently 90 feet high, is the pride and joy of many a lawn or landscaped park. Commercially, however, it has to date been found of little value. The wood is light, moderately soft, nearly white in color, knotty, brittle and weak.

Nurserymen find that seedings show a wide variety of intensity of blue coloring. They save only the bluest ones for ornamental use. For economic reasons the selected blue spruce trees are usually grafted onto the more hardy Norway spruce.

Black spruce has many other names, regulated mostly by where it happens to be growing. These names include blue spruce, spruce pine (which is absolutely a pine not a spruce) eastern spruce, bog spruce and swamp spruce. The scientific name *Picea mariana* which means Maryland spruce is by

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no means correct geographically as indicated in the early part of this article.

Heavier than the wood of any other North American spruce, black spruce weighs about 33 pounds to the cubic foot when air dry. There is a reddish tinge or a pale buff-yellow color to the wood which has a few inconspicuous resin ducts. Slow growth causes narrow annual rings and the sapwood is thin. The other two eastern spruces, red and white, are more important commercially than black spruce.

Black spruce is used chiefly in the manufacture of wood pulp for paper making for which the long white fibres make it ideal, requiring little or no bleaching. Other products for which black spruce is used because of its light, stiff qualities include: oars, canoe paddles, ladder rails, shipbuilding and building construction. Chewing gum is made from the resin and spruce beer (now a rariety but quite palatable) from branch tips that are boiled for the purpose. The Christmas tree market is also reaching out to include black spruce.

Red spruce is strictly an east coast product, its range running from New Brunswick, Canada, along the Atlantic coast through New England and thence inland along the Appalachian mountains down into North Carolina.

The narrow, dark yellow-green crowns of the red spruce pierce the forest sky line to a height of 60 feet or more. Its numerous, large, irregular branches droop toward the ground then curve upward at the ends. The red cones it develops are responsible for its name. Old trunks add to this appropriate appelation with their dark reddish brown bark which is hard, firm and about half an inch thick.

The light, soft, narrow-ringed wood is faintly tinged with red, but a layer

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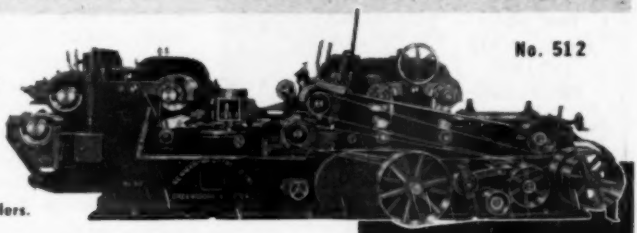

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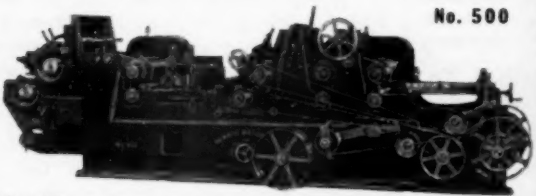

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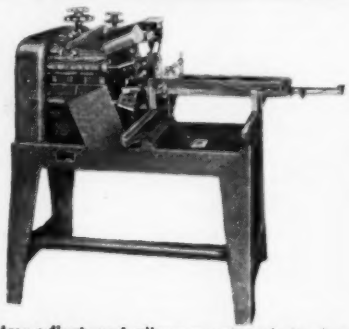

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of sapwood, often two inches thick, is almost white. The wood is light—only 28 pounds to the cubic foot when air dry. It is easy to work, free from pitch, has no distinctive flavor and holds paint fairly well. Like black spruce, red spruce is exceptionally good for pulpwood although canoe paddles, oars and ladder rails are also made from it.

Spruce of various kinds furnishes a large proportion of the pulpwood made in the United States. The annual production of domestic eastern spruce pulpwood is about 2 million cords of which about two thirds is red spruce. The Canadian supply is not only better, but greater too.

White spruce, which has a range from Labrador to Alaska, southward to Montana, the lake states, northern New York and northern New England, grows from 40 to 140 feet in height and from 2 to 4 feet in diameter.

Though widely distributed, it is of less commercial value than the red spruce but more important than the black spruce. New bark on twigs is orange-brown but ashen gray on the older trunk. On young trees the bark is relatively smooth. With maturity a scaly, pale gray to reddish brown bark formation develops.

Light weight, white spruce is pale yellowish white, soft, straight grained and has narrow growth rings. Like other spruces, it is an important source of paper pulp, construction lumber, interior finish and prized for sounding boards for musical instruments.

Engelmann spruce with its deep blue-green foliage and pyramidal top dominates the landscape of the higher western Rockies from the Yukon territory to Arizona. Many of these trees grow to be 500 to 600 years old.

Engelmann spruce, named for the distinguished botanist of St. Louis, Mo., who originally identified it, is the most important of the Rocky Mountain spruces. It is cut chiefly in Colorado,

Montana and Idaho with comparatively small cuts in Wyoming, Utah, Washington and New Mexico.

Second to the blue spruce as an ornamental tree in the forest, it is often considered more beautiful. In the spring each tree carries dark purple male flowers and bright scarlet female flower-like little catkins near the top of the tree. By the following August, these female flowers develop into cylindrical light brown cones up to three inches long. The small, dark brown, winged seeds are soon shed and by early winter the empty cones drop from the trees. The dark purplish brown or russet-red bark is about 1/2" thick and scaly on both young and old trees.

The wood is light yellowish or reddish brown, fine grained and light weight (air dry weight per cubic foot 23 pounds) and it is strong for its weight. Principal commercial uses of Engelmann spruce are for doors, windows, sash and interior trim. Better grades have been used in airplane construction. Probably its greatest use is as pulp for paper.

The spruce most widely found throughout the United Sates is Norway spruce. As the name implies, it is a native of Norway. In this country it grows with fair rapidity, attaining its full growth by 100 years in some areas. From then on it deteriorates rapidly. In fact most of these trees reach only an age of 60 years. The Norway spruce often attains a height of 150 feet. Outside of some use in construction work, its principal commercial value is pulp for paper making. It does, however, have a justified value as an ornamental tree and as a windbreak. As young trees—the first 20 to 30 years, and at a height of about 20 to 30 feet—they maintain a symmetrical cone shape with a single straight trunk. Norway spruce can be used for hedges if kept properly

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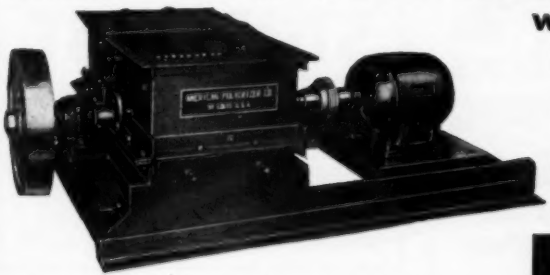

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trimmed and Christmas tree plantations have proved financially successful. Norway spruce has relatively few enemies of importance, but it may suffer from lack of moisture.

Weeping spruce, a west coast species, probably has the least commercial value of any of the spruces. Growing principally on the very steep slopes of high mountain ridges, it is quite difficult to harvest and its low value commercially keeps it pretty free of molestation by man. The long, drooping side branches and slender pointed top are characteristic of the weeping spruce which grows to a height of about 80 to 100 feet. From a distance it looks as though moss were growing from its branches, similar to the southern moss which grows on oak and cypress. This impression comes from the fact that a multitude of fine, string-like branchlets hang like a four to eight foot fringe from all but the topmost limbs.

The End

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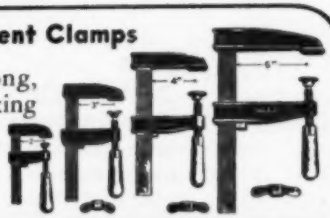

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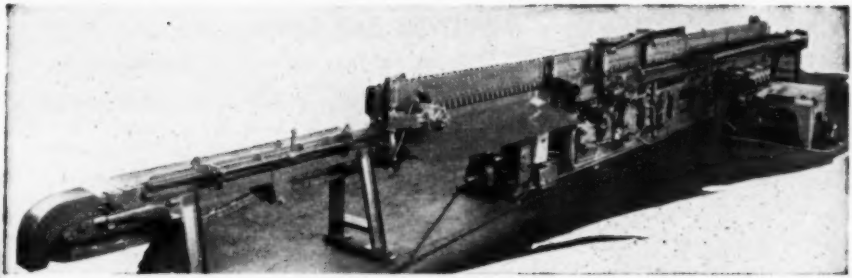

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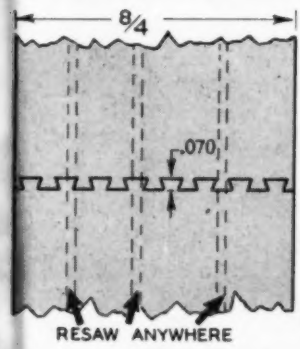

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CARBIDES for the Woodworker

AT a recent meeting of the Society of Carbide Engineers held in Boston, Mass., R. D. Brooks, woodworking tool development engineer, Firth Sterling Steel and Carbide Corporation, Pittsburgh, Pa., addressed members on the subject "Carbides Applied to the Woodworking Industry." Because of the tremendously increased significance of carbides to woodworking, and especially due to the pressure exerted upon the industry since the inception of the defense program for the development of better, faster and cheaper production methods; we are herewith providing a condensation of Mr. Brooks' discussion:

R. D. Brooks

Problems confronting the woodworking industry today are similar to those which the metalworking industry faced some 21 years ago. Over 65% of the woodworking equipment in use has been rebuilt or repaired, the latter often consisting of little more than a paint job. Yet as early as 1929 manufacturers of woodworking machinery had developed and applied such features as precision ball bearings, high arbor speeds, faster work feeds and other advantages not then incorporated into the average metalworking machine.

The introduction of carbides to the metalworking industry, with its high speed production potentialities and ability to machine the new alloy steels, brought demands for more efficient machinery; that is, machinery with sufficient power to maintain the cutting speeds and feeds possible with tungsten carbides. The machine tool industry answered these demands with machines of increased speeds, power, stability and rigidity.

Today, at least three factors are contributing to the advancement of engineering, production, cost analysis and merchandising in the woodworking industry: (1) an increased number of trained engineers have entered the industry; (2) the introduction of new materials, such as plastics, fibres, ferrous and non-ferrous metals, and photographic sheets—plus competition from within the industry itself—has produced economic pressure necessitating improved design, production techniques and finishes; (3) the application of carbide cutting tools is causing a revolutionary change in wood machining techniques.

While the problems of the metalworking and woodworking industries are similar, the materials with which

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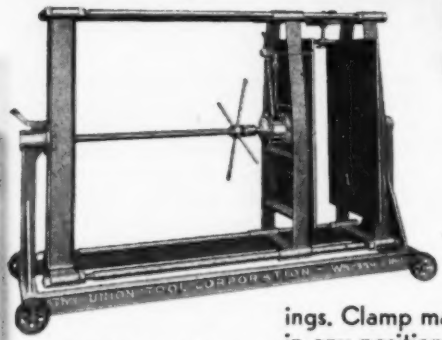

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they work are not. The chemical-metallurgical components of metals are predetermined and controlled to reasonably close limits. Specific grades of steel are the same, regardless of who produces the steel. Consequently, it is possible to determine and specify rates of feed, cutter speeds and the number of teeth per cutter with sufficient accuracy. No such stability of material exists, however, when we attempt to set machinability standards for wood. There are frequently greater variations between trees of a single species than between different species. For example, southern Indiana soft textured oak is less difficult to machine, considering tool wear, than are some grades of soft woods. Certain grades of oak are more difficult to machine than teak. Density, specific gravity, moisture content and methods used in cutting the lumber will vary to an almost unbelievable degree. These variations are largely responsible for the lack of any generally acceptable standards for machining wood.

A brief outline of the design requirements for carbide wood cutting tools will illustrate a few of the construction

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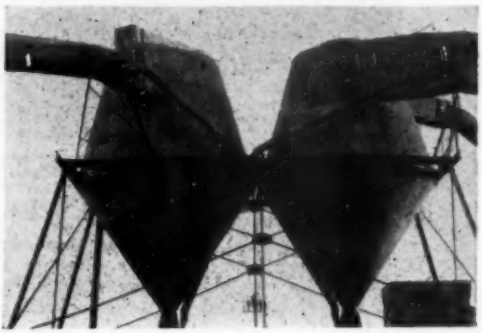

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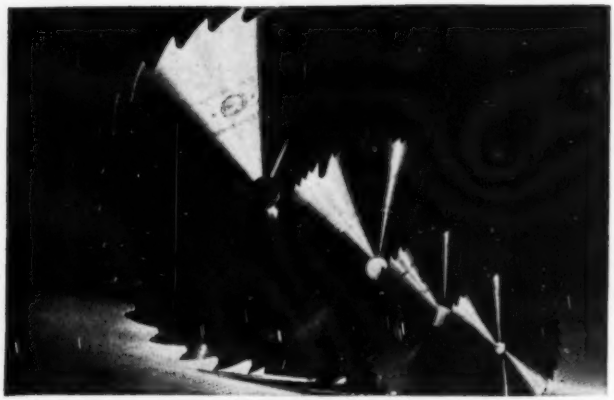
problems involved in applying carbides to the industry. Arbor speeds of woodworking machines ordinarily run higher than do those of metal cutting machines. Most modern sawing machines, within the 10" to 18" blade diameter range, operate at 3,600 r.p.m. on direct motor drive. Hand-fed shapers run at 4,000 up to 12,000 r.p.m. Moulders, matchers and stickers vary from 3,600 r.p.m. upward with a frequency charger. One new type moulder is provided with V-belt drive which allows a wide range of arbor speeds. (That carbides necessitate variable speeds, is a theory gaining wide acceptance.) Most jointers and planers run at 3,600 r.p.m. Work feeds vary from 30 r.p.m. to the high speeds of the northwest, where lumber is sized at feeds ranging from 200 up to 900 r.p.m.

Cutting circle diameters for knife



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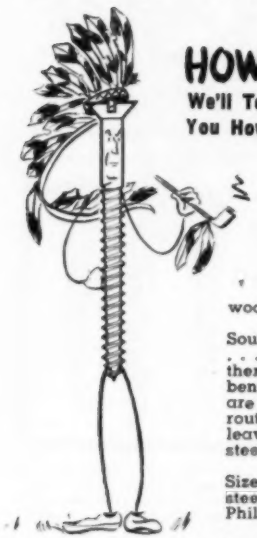
heads vary from 3" to 10½", utilizing as many as 14 knives. The front rake, or hook, of the cutting blade varies from 5° negative to 35° positive, depending upon the physical characteristics of the material to be cut and the type and condition of the machine. Included angles of the cutting tip will vary with the cutting angle. Included angles as low as 28° have been proved adequate and satisfactory.

Carbides for wood cutting tools should conform to three basic requirements: (1) ability to withstand shock; (2) resistance to abrasion; (3) capable of being ground to—and maintaining—a keen cutting edge. Requirements (1) and (2) are at opposite ends of the scale, of course, yet somewhere between these two extremes exists the best possible solution. Although possibly no carbide in production today meets all



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of these requirements, some grades are producing satisfactory results. Research and development will eventually produce better grades.

Maintenance of carbide wood cutting tools presents a serious problem. Carbide grinding equipment is not available in the great majority of woodworking plants. The prices of these grinders are somewhat shocking to the wood industry. However, one firm has recently produced a tool grinder for grinding straight and formed knifes, router bits and circular saws—carbide tipped, conventional alloy or high speed steel. It is available in an acceptable price range.

Maintenance is handicapped further by the absence of trained mechanics who have experience in using or maintaining wood cutting tools, and have received special instruction on carbide

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grinding. Men taught to grind metal cutting carbide tools require some re-education prior to grinding wood cutting tools. The same situation would exist in changing a wood tool grinder over to grinding metal tools. The cutting angles, clearance angles and reliefs are different. Two wood technology schools have been approached already regarding the establishment of courses in carbide wood cutting tool maintenance. It is certain that the increased usage of carbide cutting tools will depend largely upon a satisfactory solution to this particular condition.

The wood industry is faced with the same basic problems that still prevail in the metalworking industry. Both industries are constantly faced with the questions of when, where, why, and how to use carbide cutting tools. Many of these tools have been recommended

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and applied on jobs where they never should have been used. It is equally true that there are as many jobs where carbide tools could be applied to increase production and decrease work unit costs. These latter jobs are waiting for the right combination of production need, an increased knowledge of carbide possibilities and the ingenuity of tool representatives and tool supervisors.

Operation of carbide tools requires different techniques, speeds, feeds, and care than do high speed tools. Machines should be designed to provide the fastest production consistent with satisfactory quality finish.

These machines should provide variation in arbor speeds and work feeds. Cutters are available to both industries with various cutting points or edges, depending upon the material. The best possible combination of arbor speed, work feeds and tooth spacing is required for the most efficient carbide

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tool operation. There are few metal cutting machines which do not permit variations of both arbor speeds and work feeds. Practically no woodworking machines allow a variation in arbor speeds, although most power-fed machines do provide variations in work feeds.

The future success of carbide wood cutting tools depends upon the cooperation and co-ordination existing among the machinery builders, tool makers and carbide producers, and the woodworking industry . . . . and the ingenuity of the individuals within these groups.

He that never changes his opinions never corrects his mistakes, and will never be wiser on the morrow than he is today.—**Tryon Edwards.**

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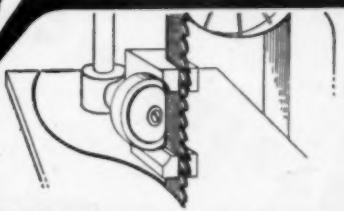

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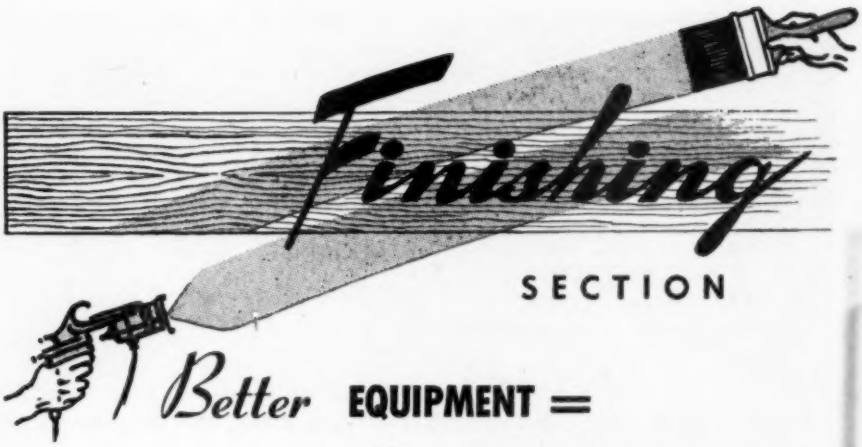


Better EQUIPMENT = Improved FINISHING

By H. H. Connelly

ONE of the amazing things about furniture finishing is the astounding fact that comparatively little development took place either in material or equipment until the start of the twentieth century. A pertinent example of this is the book by J. Wilson Neil printed in 1833 giving the first complete description of how to make varnish; this was reprinted eleven times and widely used by furniture finishers with few revisions until the turn of the century.

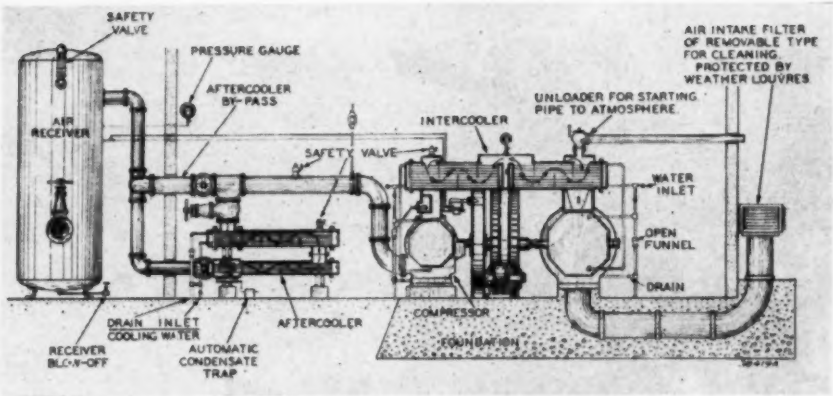
Pigment coloring was known centuries before the development of clear finish which brought out the attractive wood grain of fine wood. In fact, we don't have to peruse far to find that only a short time ago the musket loading chaps were applying finish with a mop; the bristle brush hadn't yet been invented.

From this we can see that the strides made in the development of finishing have covered a lot of ground. Much varnish has rolled over the dam in the forward steps from rags to brushes to spray guns.

Likewise, we find improvements in all finishing equipment—a natural outgrowth of research meeting the growing demands for a better finish at a lower price.

Finishing equipment embraces many factors other than spray guns, brushes and sanders. It starts with the windows, the lighting, the ventilation and the heating and takes in the spray booth, compressed air system and many other necessary factors for modern finishing. Each a separate problem in itself and each an undisputed, important factor in securing fine work.

As an illustration of the importance of the light factor on color matching, a factory finishing bedroom furniture converted an old warehouse into a finishing room. It was an emergency—floor space was needed but none of the factors just mentioned was considered. Consequently, after several months



A recommended air compressor arrangement by Ingersoll Rand for taking the outside air, filtering, compressing and storing.

operation, the customers were objecting to the finish when examined under daylight. On walnut surfaces a variation of color was noted on sapwood shaded by blending stain. Since the top coat was lacquer, which has a yellow tinge, the off color did not show up under the yellow glow of artificial lamps but was readily discernible under natural light.

Adequate natural light should be provided for the important operations of repair, rubbing, touch-up, staining and spraying. No other agent is more important for securing perfect matching of colors, and eliminating eye strain. If you are having trouble with rubbed-through-places, examine your lighting facilities at this location.

A finishing foreman was constantly plagued with this evil before he discovered the root of his trouble. Changes in operators were instituted and numerous shifts made in the method with no improvement. In desperation, a representative of the concern furnishing the finishing supplies was called in. Being accustomed to the dark working conditions, the foreman was unaware of its harmful effects. This was spotted immediately by the outsider and a change was made relocating the rubbing operation near a lighted area and the difficulty dissolved as if by magic.

Adequate Ventilation

Few finishers stop to contemplate the vast amount of air removed by a spray booth fan to the outside atmosphere, and that for every cubic foot of air removed one must be replaced. If the door isn't left open, air has the habit of finding one. Like the mouse searching for a way into a bread box, it'll make one.

One spray booth with a 22½" fan operating at 1340 r.p.m. will remove 5200 cubic feet of air per minute. A room containing six spray booths would remove 31,200 cubic feet of air. Therefore, in a room containing 10,000 sq. ft. of floor space with a 15 ft. ceiling the air would be completely removed and replaced over 12 times per hour. This is a lot of huffing and puffing in any pig's house and it doesn't take much imagination to figure out what happens to the air-tight house. Either the walls fall in or the men will work in a vacuum.

If you are planning a ventilation system, there are three important fac-

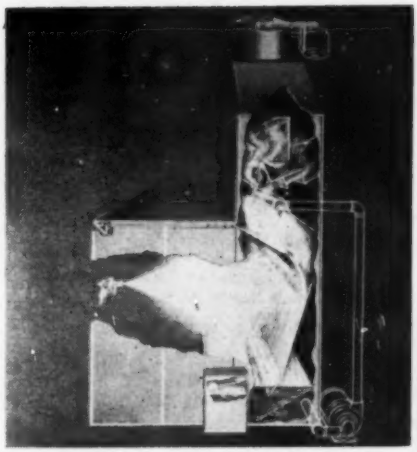
tors directly influenced by ventilation. If either is disregarded in planning the ventilation system, quality and economy will suffer. These factors are (1) dust, lint or dirt, (2) temperature and humidity and (3) finishing material drying. Dust and dirt cannot be prevented. It is in the air miles above the earth's surface; all we can hope to do is eliminate the possibility of its settling on the freshly finished surface.

In the finishing room with inadequate ventilation—one with more air being expelled by spray booths than provision made for entering—the replacement will find holes like the sly mouse. These holes are never nice clean openings. They seem to be the dirtiest cracks in the factory. Probably cracks that have been collecting lint and dust for years, until a nimble breeze heads in the general direction of the spray booths across the room where nice clean lacquer or varnish is being sprayed on the surface of a high class sideboard. If the dirt happens to be heavy enough, it may fortunately settle on stock that is tack free; then again it may finish the ride to land on the freshly varnished sideboard.

In either case it is not wanted! In the latter case it will cause an endless loss of time and money to correct.

How can we correct a perplexing problem like this? There are two answers. We begin by conceding the pertinent fact that if air is to be removed, provisions must be made for allowing the same quantity of air to enter. Step number two: calculate the volume of air to be expelled by the number of spray booths in use and add to this a safe percent for expansion.

With this information you are ready to mull over the first two possibilities. This is nothing more than providing a filtered opening in the finishing room. The velocity at which the air will enter



A modern water wash spray booth showing, through a cut-away view, how completely the air is washed from the overspray by a continuous curtain of water.

the room will be determined by the area of the opening. If the opening is too small, the air velocity will be too great and carry dust particles through the filter or the filter will impede the entrance of the air to such an extent it will find less obstructive openings.

Pressurized System

The second method to come into the picture in recent years is known as the pressurized system. Pressurizing a finishing room with clean fresh air is achieved by filtering the air that enters the room and forcing more air into the room with fans than is being removed by exhaust fans.

Consequently, since there is a greater volume of air entering the room than is leaving, the direction of air flow through the cracks and crevices is reversed. Actually the dust is being blown outside where every finisher would like to keep it. Since heat is a vital agent in drying as well as a good thing to have in winter, provision should be made for regulating the temperature at the point of filtering.

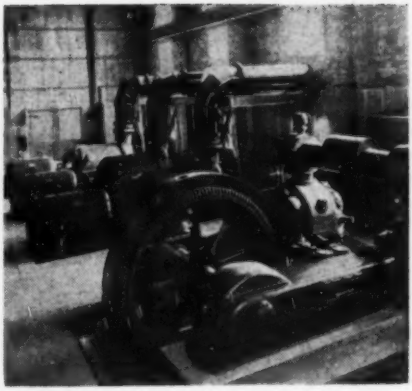
In one plant equipped with a pressurizing system the air make-up cabinets are in units, filters, fans and heaters. Each fan is capable of delivering 48,000 cu. ft. of air per minute, and the heaters are capable of raising this volume of air from 10° F. to 80° F., using steam at 15 lb. pressure. The air is filtered through 2" spun gla s replaceable filter units.

Whether you decide on the pressurized system or the natural air flow plan, the filters and heaters should be incorporated in one unit with automatic controls for regulating the room temperature and they should be located across the room from the spray booths to prevent dead air space. A free circulation of air is paramount for oxidizing varnish film to effect fast drying as well as essential in drying of lacquer film by evaporation of volatile solvents.

While on the subject of temperature, here's another point worth remembering when planning equipment. A constant working temperature of 80° F. is best for quality work. Even higher temperatures are better for varnish and enamels that depend upon oxidation for drying. The temperature should never fall below 75°. Further the heat should be evenly distributed in the finishing room.

Don't make the mistake of trying to finish stock that is colder than the finishing materials being applied. This should be checked carefully on a conveyorized system where there may be a temptation to use an unheated area for hanging a conveyor because of the lack of space in the finishing room.

One factory had an extensive conveyorized system that overflowed into an unheated warehouse and returned for subsequent spraying without provision for bringing the stock to the



A battery of Ingersoll Rand air compressors used to supply compressed air to a modern furniture plant and finishing room.

working temperature. In summer—fine. Nature did the heating. In winter trouble piled as high as Ben Franklin's kite.

Your heaters will perform one other function in summer: that of controlling humidity. If you are finishing with lacquer, nature seems to enjoy watching it turn white and will try upsetting your schedule often during the hot, humid summer months.

Plan your ventilation control system to hook up with a humidity control in summer. The heat will be automatically turned on when the danger point is reached and off as soon as the condition has been eliminated—a saving of fuel and the employees' discomfort.

The Spray Booth

The spray booth was originally designed for one purpose—to remove obnoxious paint and fumes from the surrounding area and to leave the workman free and unhampered in performing his task. It was natural that the spray booth should follow the development of the spray gun which did such a thorough job of atomizing finishing

YOU'LL GET LOADS OF EXTRA SAVINGS with UFORMITE Adhesives in Bulk!

For lowest adhesive costs, buy UFORMITE in bulk. Bulk prices are lower—and handling costs in your plant are cut, too.

You can store UFORMITE in bulk or in drums—an 8,000 gallon tank car can be drummed in a few hours, without special equipment. You have no storage worries; UFORMITE has excellent stability.

You can buy UFORMITE adhesives in two bulk grades—UFORMITE 435 and UFORMITE 400—to meet all production requirements. Both grades feature convenient handling characteristics, time-tested performance, and a choice of catalysts for all bonding needs. Bulk shipment is available from our Philadelphia plant and from Charlotte, N. C.

UFORMITE is a trademark, Reg. U. S. Pat. Off. and in principal foreign countries.

Send for detailed notes on "Bulk Storage and Handling of UFORMITE Resins", or ask our Engineering Department to help you with your specific storage problem. No obligation.

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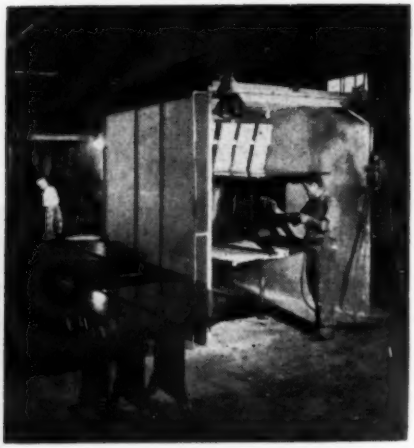
ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries



A DeVilbiss dry type spray booth and a convenient air lift for raising the stock to working height.

materials to the surrounding air. Until a means was devised to remove the vapor cloud, the workman had to walk off the job at intervals until the fumes had settled.

The spray booth like the spray gun, pressure feed tanks, or air guns, was developed primarily as a work saver. From the first crude beginning of an exhaust fan stuck in the window of a small shop, it has developed into a highly proficient and indispensable tool of the finisher. Not only is a spray booth indispensable as a work saver, but it insures cleaner work; a second saving in labor by indirect means. The cleaner the work, the less the repair bill.

With the swing of the pendulum toward the workman's welfare, another function of the spray booth has come to light—that of improved safety and better working conditions through the complete removal of harmful combustible fumes. It is not in the least surprising that lower insurance rates followed.

In general, spray booths are classed under one of two types, (1) dry or (2) water wash. The dry type merely dispels the waste materials to the outside air. Consequently if you are contemplating their use, consider these factors before deciding on the type best suited to your plant: (1) kind of material to be sprayed; (2) nearness to other buildings.

If lacquer is used, the fire hazard is multiplied with the dry type booth. You will recall the dry, powdery residue of lacquer spray is chiefly nitrocellulose, a highly inflammable material, a first cousin to gunpowder. You can imagine what would happen to your plant if the dry residue were run onto the roof through a vertical stack and an accumulation of dry powder were collected for a long period and a spark from the factory smoke stack should settle there.

Such hazards as these led to the necessity of the water wash spray booth, developed only a few short years ago, but rapidly replacing the dry type in old established factories.

The water wash booth consists of a watertight wash chamber made up of a series of cross panels. These panels or baffles are lined with spray heads that supply the water spray or mist. After the lacquer or varnish ladened air has successfully ducked through these artificial waterfalls on its way to the outside atmosphere, it is as clean as a new potato after a spring shower. In fact many manufacturers claim over 99% recovery of overspray on some materials. Water is supplied to the spray nozzles by an electric driven centrifugal pump which circulates the same water under an operating pressure of 30 to 35 pounds.

Compressed Air System

Air works both ways in finishing, and it goes without saying we would be lost trying to do a fine finishing job without it. Compressed air is indispens-

"It's simple, always cuts true and you can't wear one out!"

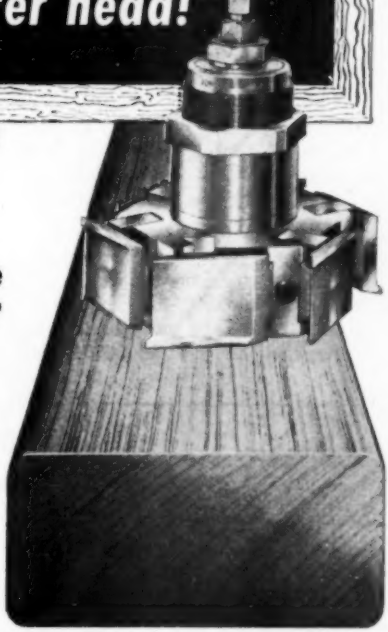
Users say: "The more you know about cutter heads, the more you appreciate the way a Jones & Orth head is made!"

When you take one apart—check its design and construction — you get a better idea of why they perform as they do.

Take our popular H-Type head for instance, such as the eased-edge model shown at the right. Knives on this head can be used right down to the last ¾ inch without change of pattern OR cutting angle!

You'll find a minimum number of parts too, and the greatest precision in adjustments plus a maximum of safety.

No wonder Jones & Orth cutter heads are the choice of so many shop superintendents with a lifetime of woodworking experience!



Find out NOW what Jones & Orth cutter heads will do for your shop! Write today for new catalog, and name of dealer nearest you. Address either our Seattle or Memphis branch!

Need specially designed cutter heads? Let our engineers help! Write us in detail. Prompt service!

JONES & ORTH

CUTTER HEAD COMPANY

385 SOUTH MAIN STREET
MEMPHIS 3, TENN.

BOX 3064
SEATTLE 14, WASH.

able as a work horse for the woodworking plant. In the finishing room it has many important functions.

Its most important function is found in the spraying of finishing materials; but there are other uses where substitutes cannot be found. For instance, the blowing off of dust left on a piece of furniture; if sealed over by lacquer or varnish, this can cause an endless trickle of criticism. It's difficult to correct and impossible to leave.

Then there's the utilization of compressed air for feeding material to the gun from the pressure feed tank; and the use of air for agitating the fluid in the container to prevent settling of materials.

Equally as necessary to the finishing room are the pneumatic tools for sanding, polishing, drilling, padding, rubbing, etc. With each additional tool, our compressed air system grows in importance. For without an adequate system our tools are useless and our work suffers distressingly, both in quantity and quality.

We have three factors by which we can adequately measure the efficiency of our compressed air system. Check your plant carefully by each before rushing headlong into an improvement program. You may be doing harm to the one phase of your system that is better left alone.

Here are the important points to check. (1) Adequate air pressure to the point of use and plenty of it. In short, your gauge may show sixty pounds (the amount of gun pressure needed to break up lacquer) but is it sustained pressure? You can answer this quickly by opening the gun and watching the air gauge as you bleed the system. If the sustained air pressure is adequate, try the second check.

ReNew GIVES NEW LIFE TO SAND PAPER AND CUTS SANDING COST **50 %**

Keep your sandpaper cutting for you with ReNew. Apply . . . let it dissolve the pitch or resin . . . then brush it off with a scrubbing brush. It's so easy and quick and makes your sand paper last at least 3 times as long.

ReNew increases sanding machine efficiency . . . paper lasts longer . . . less changes necessary.

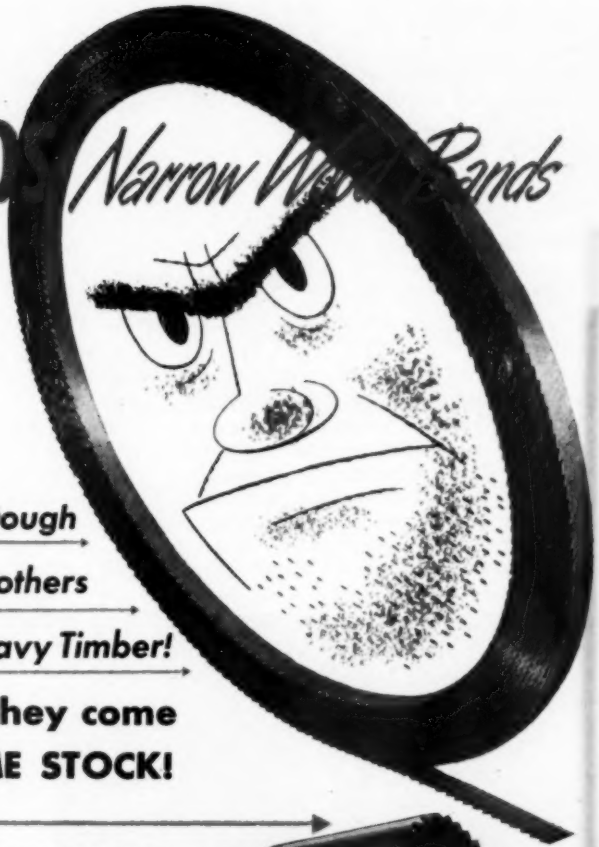
ReNew is non-inflammable.

Buy it in 55 gallon drums at $2.85 per gallon, 5 gallon steel pails at $3.00 per gallon, or 1 gallon cans at $3.25 per gallon, F. O. B. Moline, Illinois.

MOLINE PAINT MFG. CO.

MOLINE . . . . . ILLINOIS

SIMONDS Narrow Wood Bands



They're just as tough as their Big Brothers who cut the Heavy Timber!

. . . because they come from the SAME STOCK!

Yes, Simonds Narrow Bands are made of the selfsame, supertough steel . . . from Simonds' own steel mills . . . *that's used in making the big Wide Band Head Saws.* That's the first extra you get.

And you get many other Simonds *"special extras,"* too: Accurate set on *points* of teeth *only*, to guarantee smoother cut . . . Cold rolling to exactly uniform thickness prevents vibration . . . Back of saw is rounded to reduce friction on guides, preventing cracks from case-hardening . . . Gullets are filed round by special round-edged Simonds Narrow Band Saw Files, avoiding the cracks that start in sharp-angled corners.

Get Simonds Narrow Bands and Narrow-Band Files, and you're on your way to top production and savings. Tell your dealer to supply you *now.*

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

(2) Is the air dry? Moisture in an air line is about as easy to catch as a waiter's eye. When it does show up it's in the form of minute droplets that stand out on the finished surface in the form of tiny bubbles that burst leaving a rough spot; or in lacquer, large quantities cause blushing and milk-white splotches.

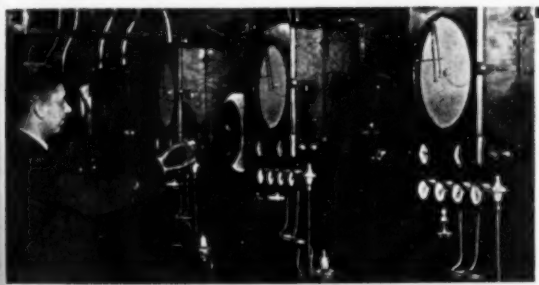
(3) The last focal point to check is that weakness in the system that allows foreign "gremlins" of dirt, lint and dust to settle or be blown on a piece of quality furniture during the spraying operation. Their presence is obvious, their elimination practical.

Now that we have defined the three ways to check the efficiency of our system, let us devise means by which we can find a solution or remedy for the deficiency. Better still, let us find ways to eliminate their occurrence when planning a layout for a modern finishing room.

We can name four adequate agents that are important enough to be treated separately and at length, in setting up a compressed air system for the quality finisher of furniture. (1) First you must know the volume of air needed. (2) The performance and compressor capacity must be known. (3) The location of the compressor must be right for best efficiency, and (4) the distribution system must be adequate and efficiently installed.

Plan Your Air Needs

Spray guns will likely be your largest continuous consumer of air, and strangely enough their consumption will be as varied as the colors of the rainbow. You will be safe, however, to base your needs on the size most generally recommended for high production work, and fitted with the recommended air cap and needle. This type is usually used for spraying lacquer and varnish



Master Mind of The Moore Cross-Circulation Drying System

Let the Moore Master Recorder-Controller take the "guess" out of seasoning: This single instrument contains four separate dryer controls: ★ Automatically controls roof ventilators, conserving steam and fuel — ★ Automatically controls and records temperatures at each end of kiln independently — ★ Automatically controls and records humidity inside kiln.

Get The Facts, and You'll Get a Moore Cross-Circulation Kiln

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

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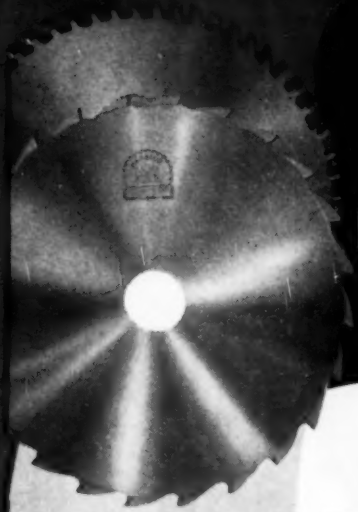
KARBIDE KING SAWS



KARBIDE KING SAWS

produce FINISHED pieces

more accurately

at Less Cost

These big production advantages are yours when you use Karbide King Saws. Your pieces are finished with joints that need no sanding or jointing operations before gluing. Because of the clean, true cutting qualities, Karbide King Saws allow you to cut pieces far more accurately which eliminates many finishing operations and cuts waste. And, because of their long life and infrequent sharpening, you get more continuous production, and less maintenance cost.

Try a Karbide King Saw in your plant and see for yourself how much time and money it will save you, as well as produce higher quality work than ever before. We'll be glad to have our representative call on you at your convenience.

SEND FOR NEW BULLETIN

This illustrated bulletin gives all the details on the complete Deluxe line. Send for your copy today!

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• RIP SAWS • TRIM SAWS • CUTOFF SAWS • GROOVERS

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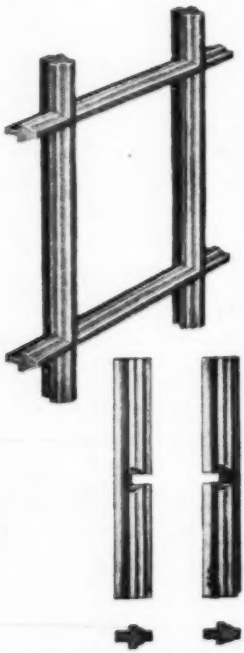


WOODWORKERS TOOL

INTERLOCK MUNTIN MACHINE

This machine is designed specifically for high production of divided light sash. Produces stronger windows, added structural strength. Eliminates pinning of short muntins and coping these on both ends. Resists loosening effect of vibration. Most important improvement in window construction in years. Reduces overall assembly time. Reduces labor cost more than enough to offset use of waste lumber now being used in machining short muntins on both ends. For instance, nine light windows of present construction require eight pieces of muntins, whereas the KNOUREK SYSTEM does a better job, quicker, with only four pieces of muntins.

This style Interlock Joint eliminates use of franking machine and sash coping machine, also cutting these to suitable lengths.

Note, two small cuts of muntins. One is grooved on putty side and mitered on face or OG side. The other is grooved on face or OG side and mitered, forming a perfectly tight joint without any fasteners.

The operation is simple, set up is fast and easy, grooves and miters are cut in one operation. Foot operated. Downward stroke of foot pedal brings up motor driven groove saw which cuts the groove; groove saw drops to lower position before knives cut the mitres, and all is done in the same downward stroke of foot lever.

Adjustable for all size sash, doors and picture windows, 3/16", 1/4", 3/8", 1/2" and wider between glass.

NOW HANDLING NEW DE WALT ALL-PURPOSE WOODWORKING MACHINES . . . TURN PAGE

WORKS . . . 220 SO. JEFFERSON ST.
CHICAGO 6, ILL.

5 new DE WALTs

to meet all your cutting needs!

1 The NEW DE WALT "400"
7 power-fed machines in one: rip, bevel rip, plough, straight or bevel rabbet, tongue and grobve, single head moulder and single head shaper. *Plus* the finest radial arm saw available—DE WALT GE or GR, 2 H.P. to 7½ H.P. *Plus* a special custom table top.

2 The NEW DE WALT "350"
The same 7 power fed machines as above and the same fine radial saw. Custom table top not included.

3 The NEW DE WALT MODEL R-2
The latest and finest receding arm Radial Machine ever exhibited, with new extra capacity motor, 2 H.P. to 5 H.P.

4 The NEW DE WALT AUTOMATIC CUT-OFF MACHINE
—for wood, plywood, metal, plastics and composition material.

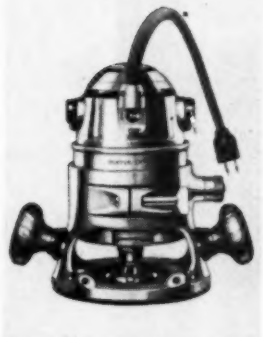
5 The DE WALT POWER SHOP
The ideal machine for light cutting. ½ H.P., ¾ H.P., and 1 H.P.

See *all* of these outstanding DE WALT models. Whatever your cutting need there is a DE WALT *made* to do your cutting faster . . . more accurately . . . with greater safety. Write for complete information. DE WALT, Inc. Dept. WD-4, Fountain Ave., Lancaster, Pa.

DE WALT INC.

A subsidiary of American Machine and Foundry Company

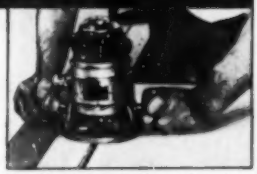
How to SAVE TIME . . .
on SCORES of woodworking Jobs!



Porter-Cable

Speedmatic

ROUTER



Cut laminates without chipping! Using carbide-tipped bits and cutters, Porter-Cable Router will accurately cut Formica, Micarta, Textolite, Farlite, Panelite and other plastic laminate board—with less tool dulling and less spoiled work!

Portable—take it anywhere in the shop, to the installation site. Use it on short-run and emergency jobs . . . when stationary tools are tied up . . . for quick free-hand routing and shaping.

Rout stair stringers 10 times faster! Porter-Cable Router and Stair Templet greatly speed up cutting of treads and risers. Templet is easily set—assures exact alignment—makes each pair of stringers "identical twins."

Do precise edging of sink openings! ...also lunch counter and bar tops, restaurant tables, walls and store interiors—cut contours and decorative edges on built-in cupboards, cabinets, bookcases. 140 bits and cutters available.

Routers available in 1 HP and 2 HP Models, featuring Micrometer Depth Adjustment, Oversize Oil-Sealed Bearings, Hardened and Ground Steel Alloy Chuck.

FREE!

48-page "Operating and Service Manual" showing how to cut and install plastic-surfaced ply boards, stair stringers, decorative panels, valances and cabinet tops, etc., with Porter-Cable Router. Illustrated. Mail coupon for free copy.

PORTER-CABLE Machine Co.

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Please send complete information on your Speedmatic ROUTER, including free "Operating and Service Manual".

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City ..... Zone ..... State .....

Manufacturers of SPEEDMATIC and GUILD Electric Tools

In Canada write Strongridge, Ltd. London, Ont.

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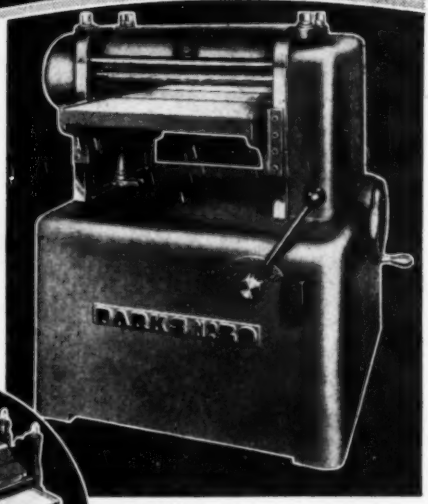
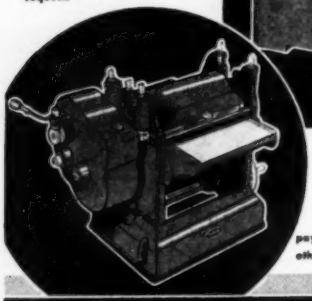
20" THICKNESS PLANER

The Parks No. 20

A modernly designed, low-priced, high-speed 20" x 6" planer that meets the surfacing needs of every type of woodworking shop. Ruggedly built for vibrationless operation—assuring quality work, increased production and low operating costs. Provides two feed speeds —20 and 40 F. P. M. and 40 and 80 F. P. M. Four-knife cutterhead has speed of 3600 R. P. M. Complete descriptive literature on request.





12" THICKNESS PLANER

A compact, sturdy machine that offers mill planer precision and ruggedness at a sensationally low price. A real heavy-duty 12" x 4" planer that can pay for itself in savings effected through the salvage of otherwise waste stock. Write for descriptive catalog sheet.

The **PARKS** WOODWORKING MACHINE COMPANY

Manufacturers of Quality Woodworking Machines Since 1887

DEPT 20-F, 1546 KNOWLTON STREET, CINCINNATI 25, OHIO

and is rated at 12.5 cubic feet per minute when operating at 60 p.s.i. working pressure.

If a different type is contemplated, consult your supplier. He can furnish information on each recommended gun and fixture.

With this information, multiply the number of guns you expect to use by the air factor for each and you will have in a nutshell your total expected volume required.

Now we are just beginning. Here are other items and their average air consumption in cubic feet per minute that we will need: dusting guns—10 to 13, polishing machines—2 to 10, air sanders—12 to 18, air powered agitator motors—3.5 to 7.

The second group mentioned are not in continuous use and therefore not to be added as a whole to the spray gun

"This Stanley Router still gives excellent service after five years of constant use."

— says New Britain Cabinet Works, New Britain, Conn.

They go on to say, "We never find a job too large or too small for our Stanley Routers . . . and their 1 h.p., 18,000 r.p.m. motors give us the power and speed necessary for fast, smooth rounding, beading, coving and fluting encountered in our work. We've had Stanley Routers constantly in use for the past fifteen years, and we couldn't ask for better performance than these tools have given us."

Users everywhere praise the performance of versatile Stanley Routers because they embody all the features for convenience and long life: lightweight portability, surplus power, high speed, ball bearings, dust protection, and micrometer depth adjustment. Ask your dealer to demonstrate these versatile tools—or write today for #96 Catalog. Stanley Electric Tools, 433 Myrtle Street, New Britain, Connecticut.

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Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

Hey, Pardner—

THERE'S GOLD RIGHT IN YOUR PLANT!

Plenty of woodworking plants, laminators and assemblers are "striking it rich" these days by using the adhesive especially designed for the jobs they do. The low-pressure and anti-crazing properties of URAC 185 make it ideal for any gluing job. Now available in pints, quarts, gallons and fives. You'll find that "extra gold" too in your plant once you start using—

URAC "185"

THE PERFECT BONDING AGENT

Write for FREE bulletin or order direct. Branches at 109 Water St., New Haven 11, Conn.; 830 Kiser St., Dayton 1, Ohio; 1103 W. Marietta St., N.W., Atlanta, Ga.; 705 Cullen Blvd., Houston 3, Texas; 5928 So. Garfield Ave., Los Angeles 22, Calif.

Trade Name registered by Amer. Cy Co. Mfr.

THE NELSON COMPANY
IRON MOUNTAIN, MICHIGAN

demand. You will find, on the average, a finishing room is safe in adding only one half of these total requirements in calculating a demand factor.

Suppose, after adding the two, we have a continuous demand for 100 cubic feet of air per minute. This represents the minimum amount of air we will need at the business end.

Our supply must exceed this; and in planning a compressor unit don't make the mistake of many concerns who fail to concede the fact that there is a loss of air through pressure drop and leakage.

Now that we have determined the amount of air we will need in our finishing process we are ready to check our source of air—the compressor. To satisfy ourselves as to the adequacy of our present system, we need to check the capacity as well as the efficiency.

If you wish to check the actual delivery and efficiency, use the simple orifice method. Connect to the storage tank a hose with an air valve and gauge for reading the changing pressure and attach a round orifice of ⅛" or ¼" diameter to the hose. With the compressor running, open the valve and allow the air to escape through the orifice. The following table will give the cubic feet of air per minute escaping at different pressure readings.

	30 Lb.	40 Lb.	50 Lb.	60 Lb.	80 Lb.	100 Lb.
⅛"	10	12.27	14.5	16.8	21.2	23.5
¼"	40	49.00	58.2	67	85	103.2

If your compressor is able to keep the air gauge on 60 lbs. with a ¼" orifice, your plant is putting out 67 cubic feet per minute. If according to your displacement formula, the unit should be putting out 100 pounds, the system is only 67% efficient.

Compressors become less efficient with age, worn parts, longer operating hours and with prolonged running, the efficiency is further reduced by excessive heat generated by the unit.

QUALITY
ALL THE WAY THROUGH
Designers, Fabricators and Installers of Dust Control Systems
ART WOOD TURNING & SCROLL CO.
CINCINNATI, OHIO
have "QUALITY" as their watchword in fine cabinet-work and use
YOUNG & BERTKE
DUST CONTROL SYSTEM
to keep saws buzzing — molders, sanders, jointers and shaper CLEAN — a capable, dependable system to carry tons of sawdust and shavings outside.
Dust-free air enables the eyes of each worker, to meet the visual demands of his job; resulting in increased individual output, better quality of work, a noticeable reduction in absenteeism and a lower company production cost. Investigate a Young & Bertke Dust Control System for your plant.
A fine piece of cabinet work designed and executed by Art Wood Turning & Scroll Company.
The YOUNG & BERTKE Co.
OVENS • SPRAY BOOTHS • DUST and FUME CONTROL
1122 BUCK ST. • CINCINNATI (14), OHIO

Therefore, any system that is overloaded will be forced to run consistently to meet the demand resulting in further efficiency drop. Plan your compressor then, with a capacity from 25% to 50% in excess of your present load. Actual tests have proved that the savings of operating costs of a larger unit over a small plant will in three years pay for the additional cost of the larger unit.

In choosing a compressor, one of many important points to be considered in its selection, as in the selection of any equipment, after efficiency and economy, is its dependability. Next we would place simplicity as an important feature in compressor equipment. For the simplicity built into any compressor means a saving of many dollars in maintenance, and lost production hours in time of inevitable trouble.

See how
MOISTURE REGISTER
saves you money!

MOISTURE REGISTER instruments

- Cut down costly finished product rejects.
- Make sure your lumber meets moisture specifications for grade.
- Reduce customer complaints and insure consistent production quality.
- Save man hours because Moisture Register tests in seconds. Oven tests take hours.
- Save freight costs. You don't pay for excess moisture.
- Save on overhead. Wet lumber increases tool maintenance.

Moisture Register Model K2D in use at Mansion House Furniture Company, Los Angeles.

Moisture Register instruments are simple to use. They show you when wood is exactly right for most efficient cutting, bonding, fitting and finishing.

10-day free trial on any model. Write today, outlining your requirements. No obligation.

Models priced from $60 to $148.50, both radio frequency and needle type. Test 80 wood varieties, wood products, wood waste and plaster, down to 0% in three seconds or less. Rugged, portable. One year guarantee. Write for complete information on Moisture Register instruments specially designed for the textile, leather, paper, wood and wood products industries.

ELECTRONIC MOISTURE REGISTER

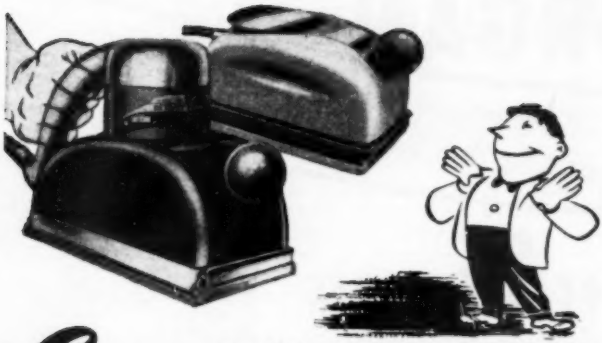
Mfd. by Moisture Register Co.
1510 W. Chestnut St.
Alhambra, Calif.

Next, we are wise to investigate the types of compressors made for industrial use and familiarize ourselves with the limitations of each. Compressors are made and designed either single stage or double stage. The smaller units for light jobs that require a minimum volume of air are usually single stage. In this type of compressor, having one or two cylinders, the air is drawn from the atmosphere, compressed to its final pressure then delivered through an aftercooler to the air receiver.

A two stage compressor has a large cylinder where the air is first compressed to an intermediate pressure, then delivered through an intercooler to a smaller cylinder where it is compressed to the final pressure for delivery to the air receiver.

Because of the higher efficiency of the two stage compressor, you will find several factors contributing to its advantages as a suitable air compressor for the finishing room. (1) Because of this increased efficiency you get more air per kilowatt hour of purchased electricity; (2) higher working pressure, which means better performance from air tools and (3) a greater storage of air supply.

The compressor location is highly important; consider these factors carefully before popping the unit down in the first convenient location. (1) Locate the intake to obtain the coolest, driest and cleanest air available. (2) The intake should be of ample size and as direct as possible. (3) Avoid steam pipes, escaping steam and dust or wet locations. (4) When at all possible, take the air from out-of-doors on the north side of the building. (5) Provide proper screening and protection with filters of the correct size. (6) Protect your system from moisture collection. This is highly important in finishing as well as in the operation of pneumatic tools. The amount of moisture carried by com-



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pressed air varies with the temperature. As the temperature drops after compression, water is precipitated. Consequently to eliminate as much water as possible, compressors should be equipped with intercoolers, aftercoolers, and full size receivers. Keep these drained and in good working condition.

If your system does not provide clean dry air, with all these precautions, use separators at hose connections. A good separator, kept properly drained, will remove nearly all entrained water, whereas a poor one is practically useless. Most water separators do not have adequate water storage capacity and are usually supplemented by auxiliary storage receiver or automatic traps. But beware of automatic traps. They can, when not operating correctly, waste more air than a Kansas dust storm.

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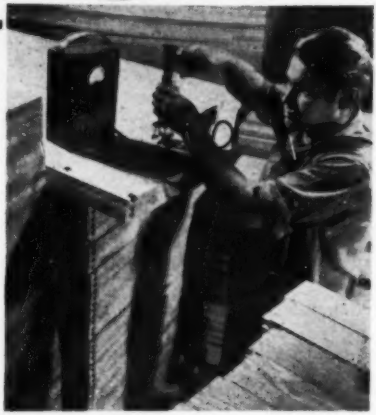

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HOT SPRAYING LACQUER

Questions and Answers

We have regularly carried articles on the hot spraying process. The process is being satisfactorily used by many wood products manufacturers. However, it is recommended that anyone considering use of the process take up the matter with a hot lacquer supplier to see whether the process is best for his particular product. The questions used here came from furniture manufacturers. The answers are supplied by Mr. J. B. Wiesel of the Hercules Powder Company.

What is the hot lacquer process?

The hot lacquer process is a relatively new technique wherein heat is used instead of volatile lacquer thinner to reduce viscosity.

Is it more economical to apply lacquer at elevated temperatures than at room temperatures?

Yes, hot lacquer can be applied at higher solids than room temperature lacquers. High solids lacquers are economical because they make possible savings in material and in the cost of application of an adequate film.

How can material be saved?

Material savings can be made in two ways. When a typical 30% solids hot lacquer is used, 2.33 pounds of volatile solvent are required to apply one pound of lacquer solids. When the same lacquer is applied at 21% solids at room temperature, 3.76 pounds of solvent are required to apply one pound of lacquer solids.

Material can also be saved by using lower air pressure to atomize lacquer when spraying. This can be accomplished by taking advantage of the viscosity drop which results from heating lacquer. The less air used in spraying, the less overspray is produced and reduced overspray means lower material losses.

How can the cost of applying lacquer be reduced by using hot lacquer?

When hot lacquer permits the application of a given film thickness in fewer coats, a large reduction in the application cost results. Thus, the reduction of a three-coat application to two coats results in a 33% saving in application cost. Likewise, the reduction of a two-coat application to one coat results in a 50% saving in application cost.

Can the cost of applying lacquer be reduced in ways other than the above when hot lacquer is used?

Yes, lacquers applied at room temperature are nearly always sanded, rubbed and polished. Because hot lacquers flow out better than room temature lacquers, less time is needed to perform this operation. Users of hot lacquer report 40-60% reduction in sanding, rubbing and polishing costs.

Is coverage greater with hot lacquer than with room temperature lacquer?

Yes, hot lacquer means higher solids and higher solids mean greater coverage per gallon. A large furniture company

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recently reported they are obtaining a coverage of 400 square feet per gallon of hot lacquer whereas they formerly averaged only 335 square feet with a gallon of varnish.

Do hot lacquers have poorer cold-check resistance than room temperature lacquers?

A hot lacquer applied at a given film thickness will have the same degree of cold-check resistance as a cold lacquer film of equivalent thickness.

Do hot lacquers print more readily than room temperature lacquers?

No, poor print resistance is a function of the inherent film hardness and of the amount of retained solvent rather than the temperature of application.

Do hot lacquers show more shrinkage than room temperature lacquers on aging?

This question is difficult to answer because no concrete definition of the term shrinkage exists. Our experience has been that lacquer sprayed both at room temperature and at 160°F. (with solvent adjustment only) do not show different degrees of shrinkage at equivalent film thickness.

Do hot lacquers rub and polish as readily as room temperature lacquers?

Rubbing and polishing characteristics of a lacquer are not functions of the temperatures at which a lacquer is applied. They depend more on the ability of the film to release solvent and on the inherent hardness of the film.

A.W.P.A. MEETING

American Wood Preservers' Association will convene on April 21, at the Hotel New Yorker, New York City for their 48th annual meeting.

Special papers are scheduled for pre-

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sentation covering subjects such as characteristics of creosote oils, use of treated lumber for railway car repair and construction, evaluation of 25 years of wood preservatives in poles and posts, effect of temperature on the dimensions of green wood, and others.

TWO COLORS IN ONE COAT

A descriptive bulletin on Multakolor has just been issued by the United Lacquer Manufacturing Corp., Dept. MK, 1001 W. Elizabeth Ave., Linden, N.J. This is the enamel that makes possible applying two or more colors in a single coat to a wide variety of products—furniture, toys, lamps, cabinets, etc.

The bulletin lists this information regarding Multakolor: methods of application, recommended spray guns and accessories, cleaning equipment, specifications, materials covered, drying times, finish, coats, colors and storage conditions.

Multakolor may be applied to materials having visible surface irregularities, we are told, and will give a smooth finish. In most cases a primer coat is not necessary.

N.G.R. STAIN BOOKLET

The Chadeloid Corporation, developers of non-grain-raising stains, have developed and now offer through their licensees an entirely new type of N.G.R. stain.

These are known as "Chadolite" or "Indian Summer" stains. They offer depth of color, enhanced grain definition and better penetration, in a wide range of shades.

A brochure illustrating this new stain is available by writing the Chadeloid Corporation, 105 W. Adams Street, Chicago 3, Illinois.

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THREE PROBLEMS IN HIGH FREQUENCY GLUING

This month's report has been prepared by John M. Yavorsky, research assistant at the New York State College of Forestry, Syracuse, N. Y.

What are the machining requirements for lumber being electronically edge-glued?

In most cases, electronic edge-gluing requires more precise machining or surfacing than other clamping methods. However, this cannot help but increase the quality of the product so that it can hardly be considered a disadvantage. In general, the following requirements should be maintained to insure maximum joint strength in a minimum curing time.

1. The lumber must be flat, since any warp, twist, or cup in the boards will reduce the area of wood to wood contact in the glue joints. In addition, non-uniform voltage gradients will be set up during the curing cycle resulting in uneven curing and arcing in the glue lines. Any attempt to flatten the stock by using excessive top pressures will only lead to the bonding of the joints in a highly stressed condition. Subsequently, such joints will very likely fail, i.e., open up, when exposed to even small variations of temperature and humidity. By ripping the individual boards to about 3" wide, much of the twisting and cupping can be reduced.

2. The edges of the boards must be straight and square in order for the proper edge pressure to be transmitted across the panel. Edges which are out of square or hollow will also result in a reduced area of wood to wood contact and non-uniform voltage gradients as described above.

3. The lumber should be of uniform thickness. Variations in the thickness of individual boards will again result in non-uniform voltage gradients across the glue lines and uneven curing or arcing in the glue lines. By allowing a longer curing period and reducing the r.f. voltage, differences as great as ¼" may at times be tolerated. If the only result of the variations in thickness is a reduced cure, then the r.f. voltage may be increased, short of the arcing point, in order to insure an adequate gradient across the glue line.

4. The lumber should be surfaced just prior to gluing. This is a general requirement for good gluing, of course, and is not restricted to r.f. gluing operations. A freshly exposed surface permits maximum adhesion to occur between the wood and the glue. In addition, a short lapse of time between

surfacing and gluing material, reduces chances for the boards to shrink or swell due to moisture change and resulting effects on the squareness of the edges.

What voltage should be used during an r.f. edge-gluing operation?

The most efficient r.f. voltage from the standpoint of minimum curing time and maximum joint strength is a function of the particular gluing set-up. It must be established by a series of cut-and-dry operations. However, based on experience gained in industry and from extensive laboratory tests, the voltages in the following table appear to provide the optimum operating ranges.

Most of the r.f. voltmeters in use at present are the peak reading type. That is, they measure the maximum amplitude or peak of the voltage waveform, and are calibrated directly in r.f. peak volts or kilovolts (thousands of volts).

The main precautions to be observed when measuring a voltage gradient are (1) the voltmeter leads should be fastened directly to the press electrodes, (2) the electrodes should be in direct contact with the work, and (3) a con-

Species of Wood	Minimum r.f. Peak Volts Per Inch	Maximum r.f. Peak Volts Per Inch
Cherry and Mahogany	800	1200
White, sugar and ponderosa pine	800	1500
Basswood, aspen, chestnut, butternut, and walnut	1000	2000
Yellow poplar and oak	1200	2000
Beech, birch and maple	1500	2500

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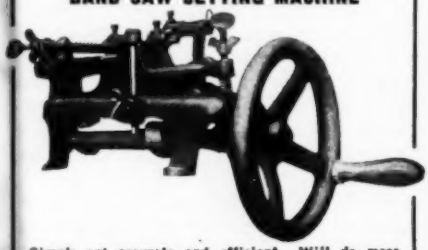

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The vise takes saw blades ⅛"—1½" in width and by automatically gripping the saw while teeth is being set, prevents twisting of narrow saw blades.
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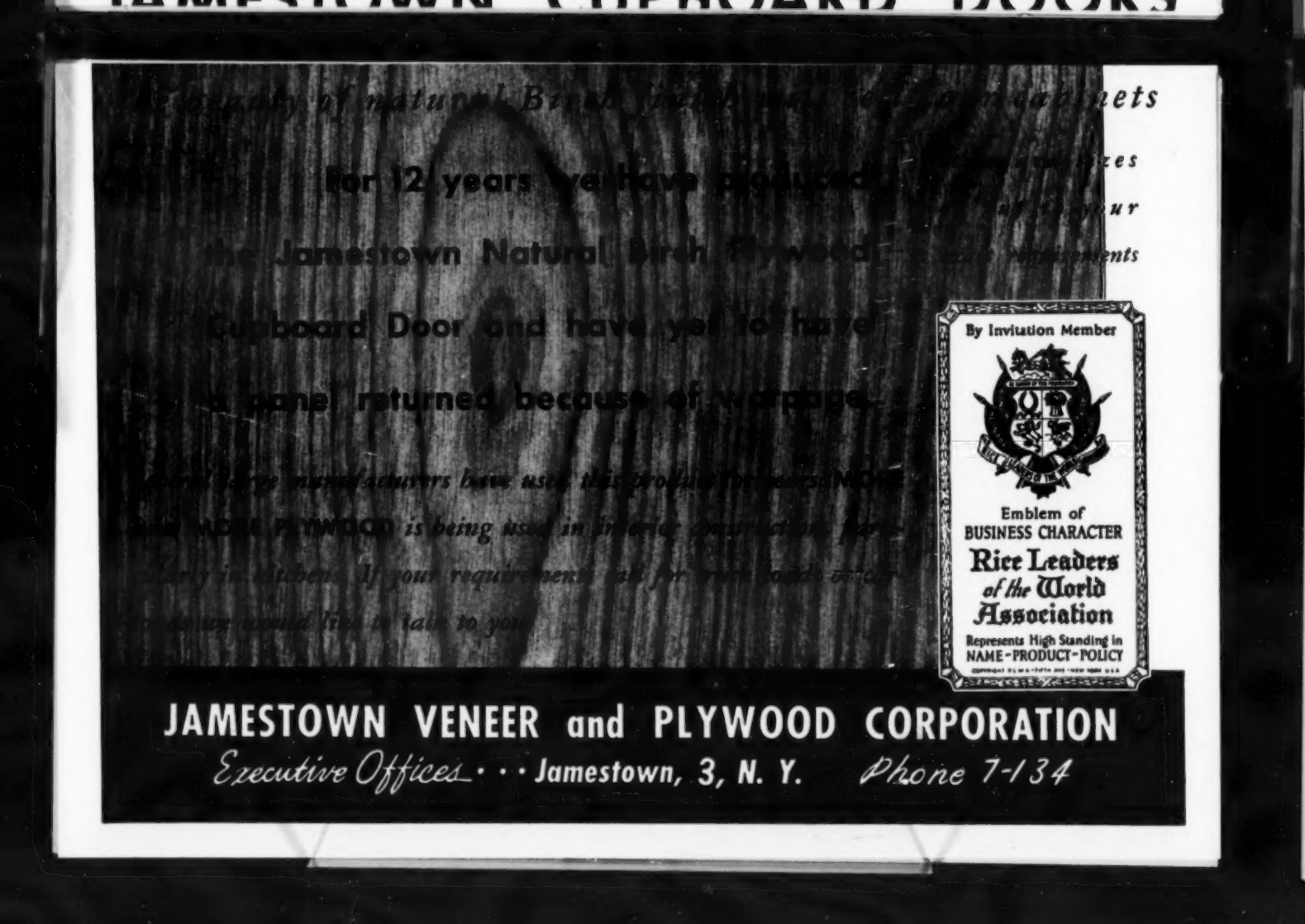
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version factor must be applied when the panel thickness differs from one inch. For example, for a panel 7/8" thick, a multiplying factor of 8/7 or 1.14 times the voltmeter reading will give the actual peak volts per inch.

Measurement of the r.f. voltage across the load is vital to proper regulation of an r.f. edge-gluing process. An r.f. voltmeter provides an easy-to-read indication of optimum tuning whenever returning is necessary. A low voltage will result in an inadequate cure while an excess voltage may cause arcing or internal burning in the glue lines. In addition, the fall and rise of the voltage during the heating cycle gives a direct indication of the progress of the curing process.

How long a heating period should be used in an r.f. edge-gluing operation?

From a production standpoint, the curing cycle should be balanced against the make-up time. For instance, if it takes 45 seconds to lay-up a load for an edge-gluing press, a curing cycle of 45 seconds or slightly less should be used. When edge-gluing thick stock (6/4 or over), bowed and twisted boards, or high density species, a curing period in excess of the lay-up time may be required.

All of the thermosetting glues used in r.f. gluing processes are dependent upon a temperature-time relationship for their cure. In the r.f. gluing process, the heat generated in the glue lines is a function of the r.f. voltage and the heating time. Consequently, there is a mimimum r.f. voltage required to obtain an adequate cure for any given heating period, and the lower the r.f. voltage the longer the curing cycle. On the other hand, the r.f. voltage cannot be increased

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indefinitely in order to reduce the heating time since excessive voltage will result in arcing or internal burning in the glue lines.

The heating period should be long enough to obtain sufficient joint strength in the glue lines to withstand subsequent machining and handling. However, the maximum strength of the glue bond is not necessarily developed at this time. In general, it is usually a matter of compromise between using a maximum voltage gradient short of the burning or arcing point and achieving a balance between man and machine time. However, experience in industry has indicated that 4/4 lumber of low density species can be edge-glued in loads up to 40" x 80" in area in 20 to 40 seconds. This depends upon the output power rating of the r.f. generator and the permissible voltage gradient across the load. The same size load in high density species under optimum operating conditions requires 45 to 50 seconds.

MASKING TAPE

The Behr-Manning Corp., Troy, N. Y., announces the addition of a new masking tape to their line of Behr-cat brand pressure sensitive tapes. This new product is No. 115 stain-resistant masking tape.

It is specifically designed for use on lacquered, enameled, painted and porcelained surfaces where color separation, masking, packaging and holding functions are required. It is particularly effective on white, off-white and light pastel colored surfaces. The research facilities are available to interested firms and sample products or sample finishing agents may be submitted for suggestions and recommendations.

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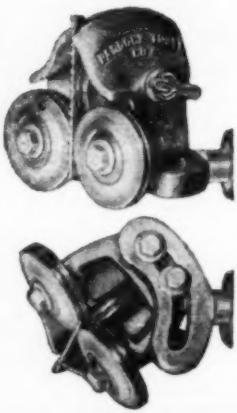

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DOUGLAS FIR

How long will durable Douglas fir timber withstand insects and disease once it's killed by fire or natural causes?

Douglas fir trees killed in the Yacolt fire of 1902 are still sound. Evidence continues to mount, according to W. D. Hagenstein, chief forester for the Douglas fir industry, of the tremendous resistance to natural enemies—fungi and disease—which nature has developed in this great tree.

Hagenstein says no other American timber species serves human needs in such a wide variety of ways as does Douglas fir. It is the leading softwood veneer and plywood species. It provides about one-fourth of all the lumber sawed in the nation. It supplies raw material for about a million tons of wood pulp each year. In addition, its long, straight trunks are used throughout the world for poles and piling.

Durable Douglas fir lumber is most familiar as framing for houses, schools, factories, churches, and other necessary structures for human use, the forester observed. Most lumber in railroad cars is Douglas fir and the species is among the leaders for railway ties.

During World War I this lumber built thousands of ships to bridge the Atlantic. In World War II Douglas fir became sought after for smaller ship construction. Even today, Douglas fir is supplying the lumber for glue-laminated ribs and most of the rest of the deck and body of mine sweepers and other similar craft.

Not many people know that Douglas fir lumber is one of the leading finishing woods, Hagenstein reminded. He said millions of feet are used in sash and door, flooring, blinds, millwork and hundreds of other uses where fine texture, durability, flexibility and quality are demanded.

A man could retire nicely in his old age if he could dispose of his experience for what it cost him.—Gilcrafter, Gilbert Paper Co.

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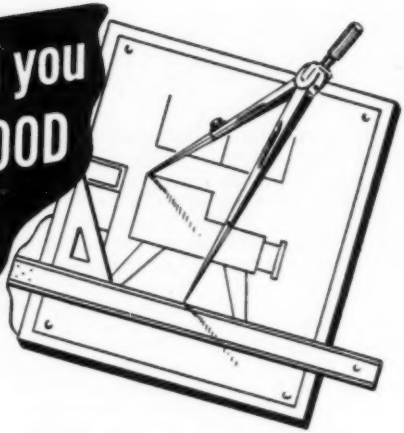

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TYPES OF PLYWOOD

Part 7

PLYWOOD IN BOAT BUILDING

By Thomas D. Perry

THE successful application of plywood to hulls, cabins, decks, bulkheads, etc. in boats, as well as to marine structures, such as boat houses, fish houses, floats and other constructions, in or near fresh or sea water, requires plywood that is thoroughly waterproof.

Such waterproof plywood must be made with waterproof adhesives, but it is incorrect to assume that all plywood made with waterproof adhesives is waterproof plywood.

Definitions of Waterproofness

This distinction may be clarified by several definitions.

Waterproof adhesive: An adhesive which, after proper application and cure and hardening, becomes non-soluble in water and is not appreciably weakened or deteriorated by continuous or intermittent exposure to or immersion in normal fresh or sea water.

Waterproof joint: A glue joint of any type, made with a waterproof adhesive, in which the stresses imposed on the wood fibres by continuous or intermittent exposure to or immersion in normal fresh or sea water do not significantly weaken the wood or cause failure adjacent to the joint.

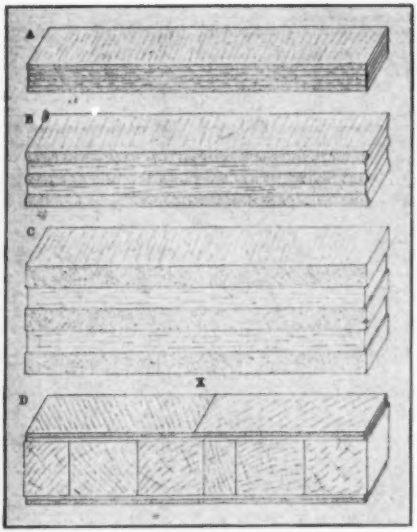
Waterproof plywood: Plywood where surface, edge and scarfed glue joints are all made with waterproof adhesives in plywood constructions in which the shrinking and swelling stresses of the veneers do not develop appreciable weakening or cause failure in the wood structure at or near any glue joint.

It is possible that there may be some difficulty in the interpretation of these definitions. They are so important, however, that a few illustrations and descriptions of several plywood constructions, which do or do not meet these requirements of waterproofness, may be helpful.

Dimensional Changes in Veneer

It is recognized by the Forest Products Laboratory* that practically all of the shrinkage in wood occurs below a moisture content of 30%. Dimensional changes at higher moisture contents, if any, are relatively insignificant. As a practical matter, wood expands or contracts approximately 1% widthwise for each 5% change in moisture. In other words, a dry board, or a sheet of dry veneer, 12" wide at 5% m.c., when thoroughly wetted to 30% m.c. (25% up), may swell or expand to 12.60" wide. Conversely, a wet board or sheet of veneer, 12" wide at 30% m.c., may contract or shrink to 11.40" wide, when dried to 5% m.c. (25% down). This is a general average, with higher percentages as the density of the species increases, as well as for plain (tangential) cuts; and lower percentages in the softer woods and in quartered (radial) cuts. However, this

* "Wood Handbook," 1940, 193 et seq.



Courtesy U. S. Plywood Corporation.

Fig. 1. Dimensional changes in layers of plywood.

average of 5% dimensional change will demonstrate the problems involved in making waterproof plywood, in which the potential tendency to expand or contract, at the joint between the adjacent cross layers, may normally be as much as one half inch per foot of width. Since the strata of waterproof adhesives will act as a retardant to water penetration, the highest water absorption will occur where end wood is exposed, which happens to be the point of greatest danger for delamination.

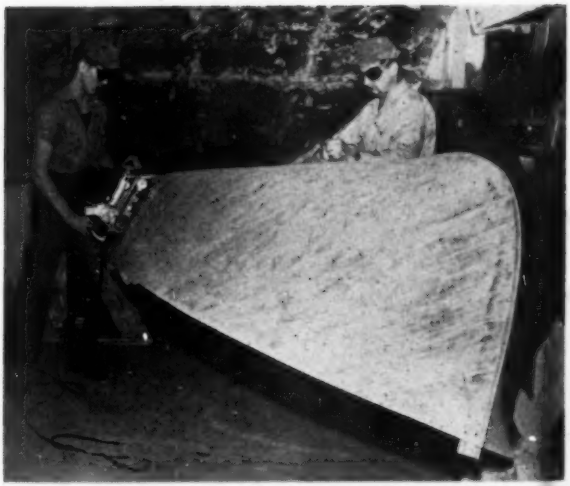
Waterproof Constructions in Plywood

Several illustrations are given in Fig. 1. The upper sketch (A), shows a 5-ply construction in plywood from 1/16" rotary veneer, approximately 4" wide by 1" long. When thoroughly soaked the veneer layers, if not restrained, have a possible expansion of about 1/5", but this expansion is resisted by the glue joint, which has a greater power to hold than veneer of that thickness has to shear away sidewise. When such plywood is made, even with a dense species of veneer such as birch, with a properly applied waterproof adhesive, it will be waterproof plywood. It can be noted in the sketch that the edges of the veneer protrude slightly, little if any at the glue joint, but the center of the veneer layer is definitely crowned outward.

In the case of the sketch B, using 1/8" veneer, there is the same potentiality for expanding 1/5", but the power of the wood to expand may be equal to or exceed the grip of the adhesive at the joint. Doubling the thickness of the veneer doubles its power to expand. This power to expand increases with the density of the species. Hence such plywood constructions in 1/8" birch veneer may possibly delaminate and cannot be considered waterproof. If made of a low density species, such as 1/8" poplar, in which the power to expand is distinctly less than in birch, it will rate as waterproof plywood. The swelling at the edges can be noted as in sketch A, but it is greater.

Still another example is given in the third sketch, C, where all layers are 1/4". Here the potential expansion is still 1/5", but the power to expand is fourfold that exerted by 1/16" veneer in sketch A. Plywood made of 1/4" veneer will not be waterproof plywood, even with a waterproof adhesive, no matter what species is used. The joints, if thoroughly wetted, will tear apart at the glue line, and the edges overhanging the ends of the adjacent layers will tend to jut out abruptly, and be square, rather than crowned as in sketches A and B.

The final example in Fig. 1, D, shows an end view of a lumber core plywood construction, with 1/28" face and back laid on 1/20" cross bands. If this is made with a waterproof adhesive, the result



Courtesy U. S. Plywood Corporation.

Fig. 2. Sanding a molded plywood hull.

after thorough wetting, will be a torn joint at the glue lines next to the core, but a sound joint between the face and cross band, and also between the back and cross band. Experience has demonstrated that waterproof plywood cannot be made in lumber constructions.

If waterproof plywood is required in 13/16" thickness, as is standard in lumber core plywood, it must be made 11-ply of 1/12" veneer in such densities as birch; 9-ply of 1/10" veneer of mahogany and like densities; and 7-ply of 1/8" veneer of woods classified with poplar as low density species.

Specifications for Waterproof Plywood

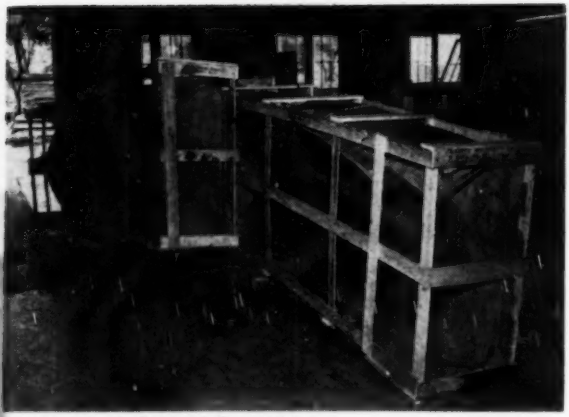
Waterproof adhesives for plywood were not commercially available until the advent of synthetic resin in the late 1930's, and it required a background of several years of factory and field experience to find the practical solutions of the problems outlined above.

Commercial standards for waterproof plywood have now been adopted by softwood and hardwood plywood manufacturers and users, under the supervision of the U. S. Bureau of Standards, which embody the data outlined above. Since these standards are revised from time to time, interested parties should obtain the latest revisions either from the bureau or from their trade association secretaries.

The hardwood specification, CS-35-47, for fully waterproof plywood, type I, limits the maximum thickness of any veneer layer to: 1/12" in high density species, such as birch, hard maple, oak, etc.; 1/10" in medium density species, such as mahogany, soft maple, gum, walnut, etc.; 1/8" in low density species, such as basswood, cottonwood, yellow poplar, etc.

The glue joint, when tested in standard shear samples of 3-ply 3/16" plywood, after cyclic immersion at 145° F., and also after boiling 4 hours, must exhibit minimum shear strength and minimum wood failure, when tested wet, depending on the density of the species.

The softwood specification, of which Douglas fir is the important example, CS-45-48, for the exterior type repre-



Courtesy U. S. Plywood Corporation.

Fig. 3. Molded plywood hulls crated for shipment.

senting the ultimate in water resistance, provides no veneer thickness limits, but practical requirements are between 1/12" and 1/6". On a specific gravity basis, Douglas fir would rank with the medium density hardwoods. Test samples and test procedures are essentially the same as for hardwood, except that acceptability depends wholly on the estimated percentage of wood failure, and there is no minimum shear strength limit. It is to be observed that all of the above tests are on a performance basis, and do not stipulate the type of adhesive, except that it must meet the minimum standards of durability.

The significance of using water at elevated temperatures, and of actually boiling the samples, should not be misunderstood. These are wholly accelerative effects of abnormal severity, to save time and to establish comparative factors of durability in the adhesives under test.

Waterproof Adhesives for Plywood

It was not until 1940 that suitable synthetic resin adhesives for waterproof plywood were available in practicable quantities and that the use of hot presses had become established in the plywood industry. The first of the waterproof adhesives was Tego, in film form, a phenol-formaldehyde resin adhesive, which was put through a rigorous testing program, and was demonstrated to have maximum waterproofness. Shortly thereafter similar phenolics became available in dry powders and liquid solutions. Hot pressed plywood is regarded as more reliable than phenolic glued plywood made with most room temperature catalysts.

Resorcinol-formaldehyde resin adhesives followed the phenolics, and have been found well adapted to lumber laminating. They produce bonds equal to those of the phenolics in waterproofness, but their higher cost bars them from general use in plywood. While resorcinol bonds in laminated lumber can be cured at room temperatures of 75° F. and up, they show better durability when cured at 200° F.

Melamine-formaldehyde resin adhesives have most of the waterproof qualities of the phenolics, but are used to only a limited extent in waterproof plywood. Adhesive manufacturers should be consulted with regard to their use.

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qualities, are not adequate for waterproof plywood, although some fortified types, when combined with resorcinols, may be worthy of investigation for certain purposes. Again adhesive manufacturers should be consulted.

A note of warning should be sounded, with regard to assembly gluing with hot pressed resin bonded plywood. The smoothly "ironed" surface of hot pressed plywood may retard penetration, and may not give strong and durable assembly joints. Light sanding will be found to improve the character of such assembly joints, and should be made standard factory practice.

Boat Building Industry

The building of wooden boats dates back many centuries, and is steeped in traditional methods, with a wealth of experience as to how to make good boats. One of its fundamental considerations was to take advantage of the normal tendency of dry wood to swell or expand when wet, as a means of closing the inevitable cracks between individual boards. This involved the use of relatively narrow boards, where the expansion of approximately 5%, as explained above, would be adequate to make the edge joints tight. Too much expansion per crack, as in an over wide board, would be likely to tear the nails or screws loose and cause bulges. The adequate fastening of each board in place was essential. Too little expansion, or very narrow boards, would leave cracks and require caulking. The proper regulation of this expansion tendency was the measure of success in boat design, but could only be acquired by long experience. The curved shapes of a hull required the accurate tapering and fitting of many of the wood strips, all of which took time, skill and suitable equipment.

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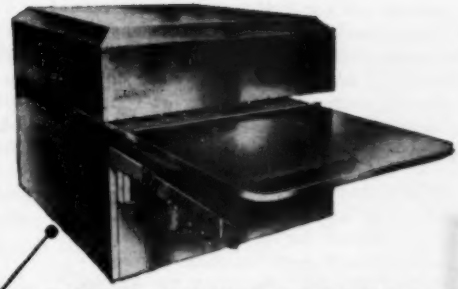

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Another factor in the year 'round care of boats made of solid lumber was the tendency of these edge joints to open by shrinkage when the boats were taken from the water for painting or repairs, or to avoid ice damage in fresh water during the cold seasons.

It was no more than natural that this traditional background of compensating for the normal shrinking and swelling of lumber would develop considerable resistance against changing to an improved wood construction, such as plywood, in which factors of shrinking and swelling are practically eliminated. While there would be far fewer edge joints, since plywood is available in large sheets, those that remained must be made permanently tight.

Boat makers were apprehensive about the durability of the glue joints, although actual experience over the last few years has thoroughly dispelled this doubt.

There are several favorable factors in the use of plywood in boats, which are rapidly gaining deserved recognition: the non-splitting quality; the distributed strength; the substantial reduction in the number of joints; the ease with which plywood can be curved; the reduction in weight for strength equivalent to solid wood; the stiffness obtainable with hollow girders; and the like.

As a result of practical experience during nearly ten years, waterproof plywood has become well established in the small boat industry. A few old timers still find it difficult to overcome their reluctance to go contrary to established traditions. Since plywood is generally available in warehouse stocks up to 12 and 16 foot lengths, joints are not a problem except in boats longer than 15 feet. Scarf jointing, with 1:12 slopes, has been well developed for end splicing in longer boats.

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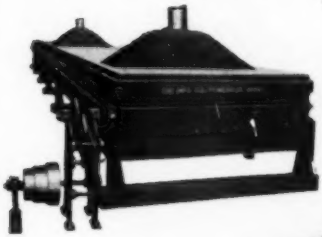

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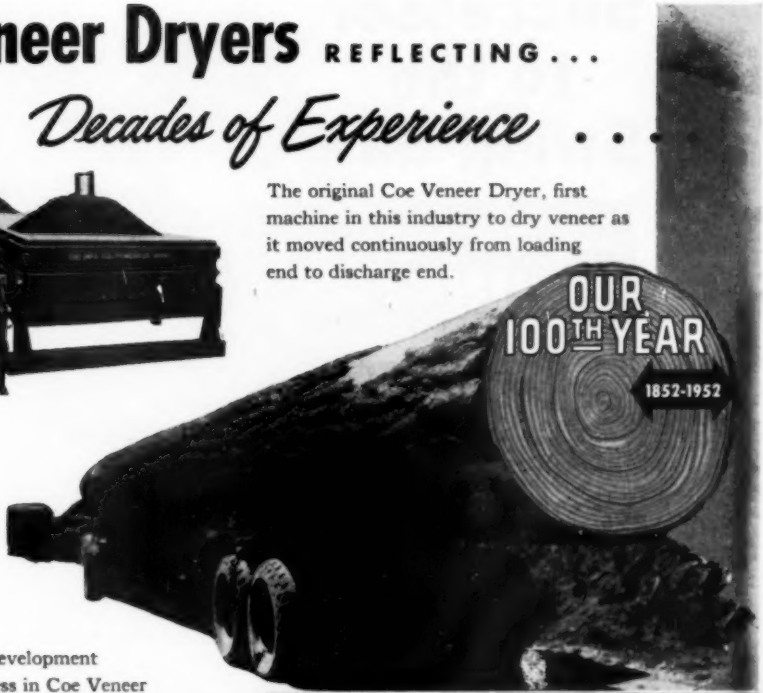

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and dinghies can be made from flat plywood that can be bent sufficiently to meet the required curvature. In other cases, the stern half of the boat can be made of flat plywood and scarf jointed to the forward half, which may be made of molded plywood, providing the compound curves required. The stern transom is usually made of thick solid wood to give the stability needed for clamping the outboard motor.

A note of caution should be given, that all raw plywood edges should be fully protected from moisture penetration, since excessive swelling in the end grain of the veneers may lead to damage. Such ends and edges, if concealed, should be well bedded in lead and oil, or if exposed, should be kept well painted or varnished. Since the outer layers of the plywood are thin, it is even more important that all boat sur-

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faces be kept well painted, than in the case of solid wood hulls.

Molded Plywood Hulls

The techniques of making plywood in compound curvature by flexible bag or omni-directional pressure will be more fully covered in a later article in this series, but attention should be called to this type of plywood, which is so admirably adapted to small boats. It is a method of laying veneer strips, coated with an adhesive, on a male mould, and applying effective pressure, evenly distributed, over the entire curved area. The resulting plywood is bonded together, and to the keel and stem in a single operation. The sanding of such a hull is shown in Fig. 2, after the sheer line of the boat has been trimmed. Note the angling position of the veneer strips and that the plywood has been glued to the bent stem in the molding-gluing process.

Crates of such molded plywood hulls are shown in Fig. 3, nested for shipment. The stern transoms, of thick solid lumber, are installed later, and except for this single item, they are truly one-piece hulls, with leakable joints reduced to an absolute minimum. It must be obvious even to a hardened and unregenerate landlubber like the writer, that this elimination of joints makes for a sounder and safer boat, much lighter and stronger, than its counterpart made of lumber in the traditional way.

Laminated Stems, Ribs and Keels

Laminated lumber, differing from plywood in having the grain direction of all veneer layers parallel, requires the gluing technique of plywood. It overcomes the hazards of bending solid wood members, which may tend to open out in service, and eliminates the sloping joints usually required where the stem and keel join. Assemblies of 1/8" ve-

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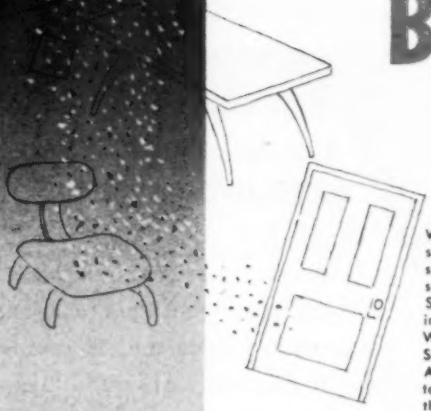

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neer strips can be coated with glue, and are easily bent to the required curvature, the veneer strips extending as far as possible into the keels. The same techniques can be used for ribs, which can be one-piece from gunwale to gunwale. Such frame members, in molded plywood hulls, can be recessed in the mold, and rigidly glued in place as the plywood is made.

Plywood for Cabins and Interiors

Waterproof plywood, in simple curvature, can be curved as it is glued, or flat plywood can be saw-slotted on the concave side, for rounded partitions, curved corners, and for various types of streamlining. Such curved plywood will serve as stiffening, eliminating much framework and thus reducing the weight of many items of boat equipment. The usual joints between strips of solid wood can be reduced to a minimum, with no sacrifice in strength and rigidity.

Conclusions

Waterproof plywood, as it is now available in many species, sizes and thicknesses, is a relatively new material that can be a challenge to boat designers. It can be fashioned into many new and novel effects, both pleasing in apperance, as well as sturdy, strong and rigid. Its durability has been well demonstrated and the traditional reluctance to its use is fast disappearing.

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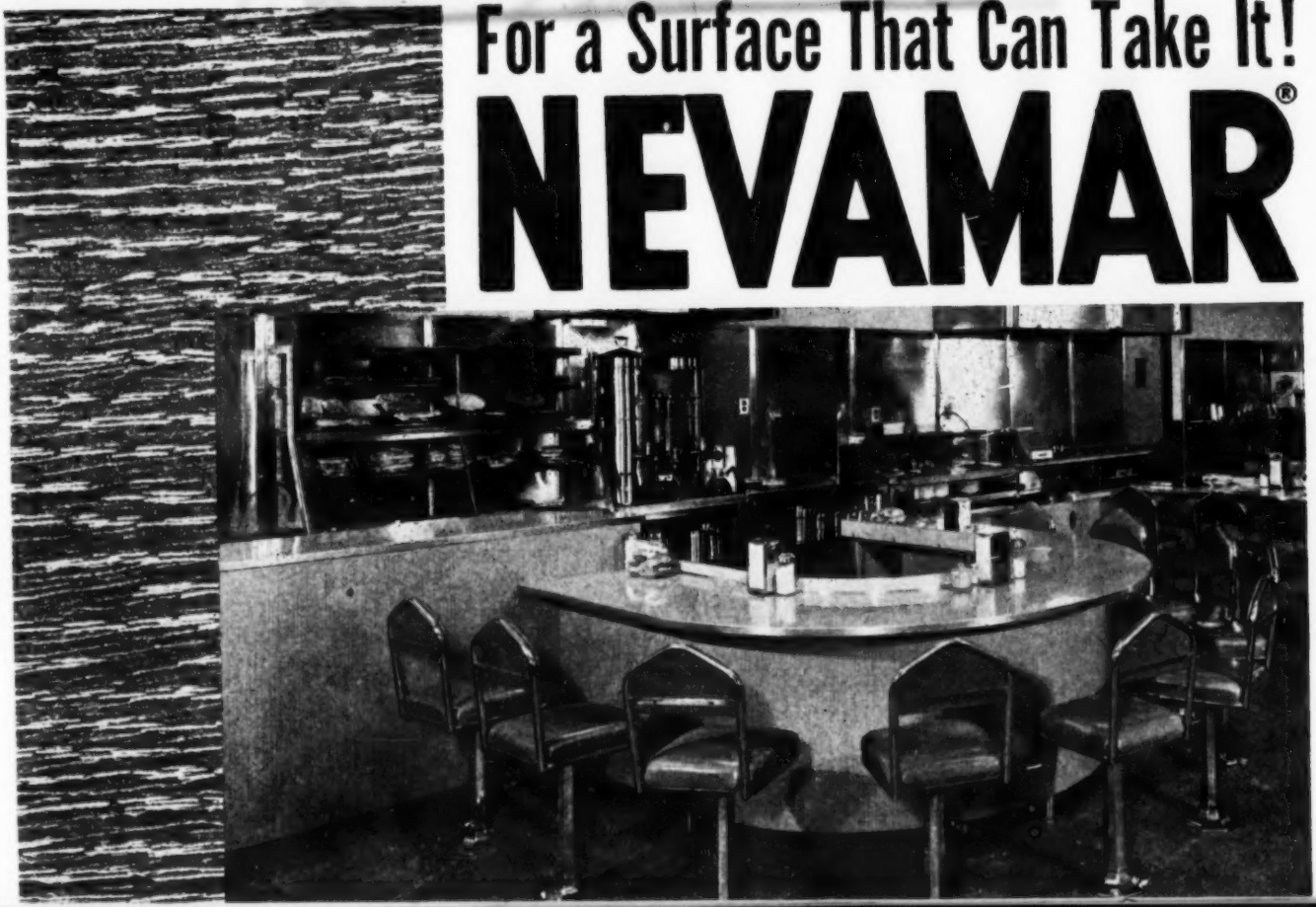

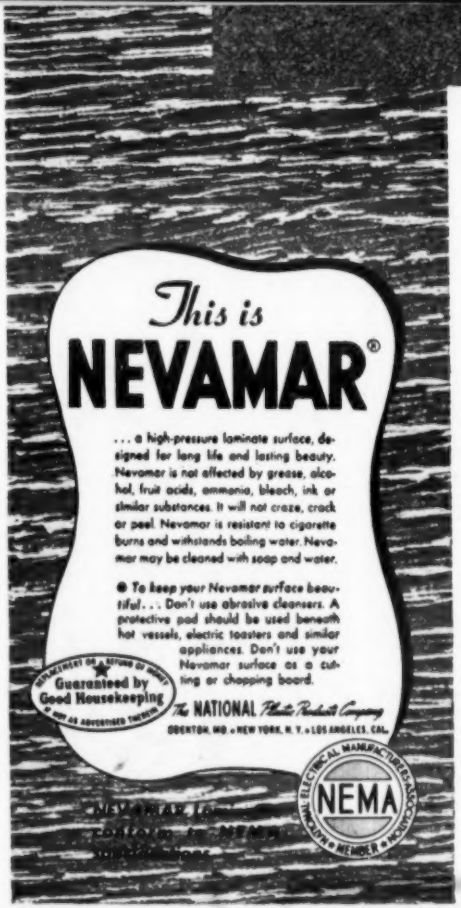
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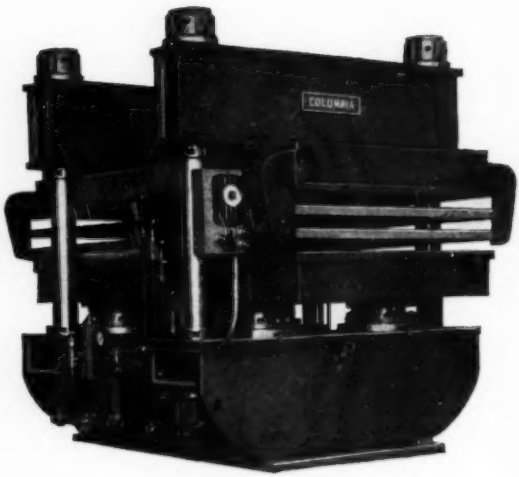

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***and* COLD LAMINATING PRESSES**

VENEER and PLYWOOD

FARM BUILDINGS

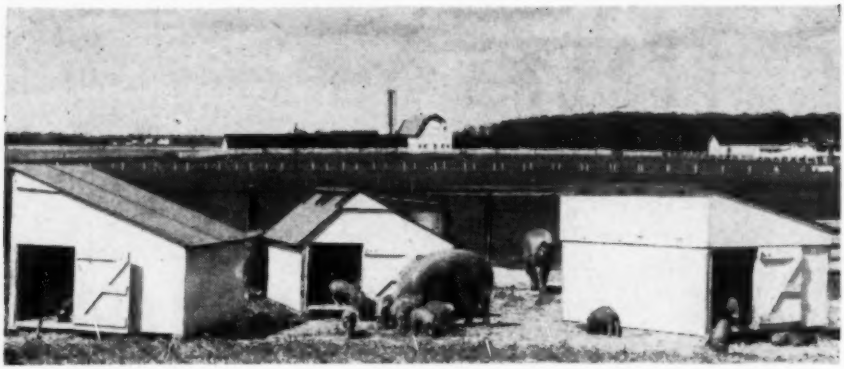
PART 19

By Ned Bailey

ONE of the foremost magazines for advertising men, "Printers' Ink," published a feature article in their issue of Febuary 8 about the upward trend of advertising to farmers in farm magazines. As typical they listed leading manufacturers including among others, General Motors, General Foods, General Electric, Proctor & Gamble and Chrysler Corp. The overall increase, including the amount spent by those just named, for 1951 over 1949 was well over two million dollars. Why this tremendous increase? The reason is known generally: the farmer has money to spend and he is spending it. The farm market has grown to be a market of major importance. To date it has, with a few exceptions, been sadly neglected by the manufacturers of wood products such as plywood and prefabricated farm structures.

The farmer usually considers his farm's productivity more important than his standard of living. Therefore, farm buildings and equipment come first with him, then home building. Only when the farm is a fully equipped and producing unit and the debt on the land has been reduced to manageable proportions does he decide to rebuild or build a new home. Fortunately, recent years of prosperity have helped equip farms and reduce debt to the extent necessary. The result is an expanding market for farm buildings and homes. It is estimated that from two to three million farm homes are in need of construction or remodeling in the next 10 years. What an opportunity for our industry—particularly that segment of it that is already in the prefabricated field or can get in it. If ever there was an opportunity for prefabricators of both home and other farm buildings, this is it.

However, the prefabrication industry will not fulfill its destiny simply by working around the edges of the housing market. Here its products and methods have certain special advantages. I am personally of the opinion that the great opportunity which confronts the prefabrication industry today is to play its most important part fully in the developing industrial revolution in



Modern prefab pig houses. Note difference in roof styles. These houses are built on runners for ease in moving.

building construction. Let the industry move into all segments of the market—from hen coop to large size barn or silo, from simple four-room house to the seven or eight-room house or duplex. Let the manufacturers of prefabricated buildings take over these markets with the strongest of competitive weapons—"Better Quality at a Lower Price Through Prefabrication."

I am making this strong appeal because I feel the industry will prosper in proportion to its effort to serve all classes of demand with a better product at a lower cost. This it can do. Certainly by combining new technical developments with new and properly adopted business methods the industry can gain a favorable position in all classes of prefabricated structures. During the last decade the search for economy in house production has led us in many directions. It is indicated very clearly that the greatest potentials for economy lie in improved industrial organization and business methods, laws and regulations in the housing industry. Much credit for what has been done to date to bring the prefabricated building industry along as far as it has come, surmounting many all but insurmountable obstacles, goes to the Prefabricated Home Manufacturers Institute and the Douglas Fir Plywood Association.

This prefabricated hog house was purchased KD from the lumber dealer. The rigid panels of exterior plywood were assembled and erected by the farmer and his helper in two hours.

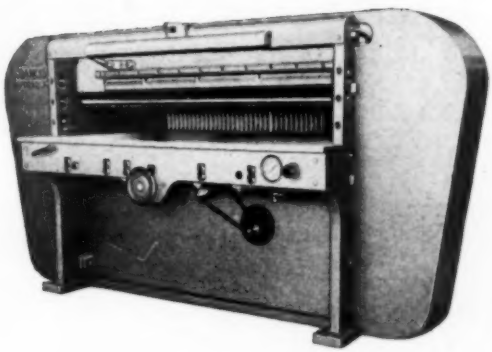
Now get

FAST ACCURATE CUTTING

Straight, Sharp Glue Joints • cross or with grain

with the NEW Francis

EST. 1880.



The New Francis Hydraulic Precision Cutter incorporates many features discovered under practical, production procedures in the plants of America's leading veneer and furniture manufactures.

Designed, developed and engineered for durability, the Francis Cutter has been tested and proved on America's production lines. It is sturdily and rigidly constructed, accurate to 1/64 cuts. It delivers sharp, straight glue joints on veneers up to 90 inches in width and in bundles 7" thick.

Its "easy-to-read" scale is illuminated by a flood light on the front cover. With three 20" long scales on the front section of the cutter table, a magnified depth scale of 1" wide by the depth of the machine, is graduated in 1/16", plus a master scale for positioning back feed bar, assures easy and accurate measurement for precision cutting.

The hold down bar is hydraulic pressure operated and is adjustable from a maximum of 7" to a minimum of ¾" wide clamping area. The back feed bar is electrically driven, but can be manually operated for fractional cuts.

Write or phone today for complete details and specifications.

CHAS. E. FRANCIS CO. — HUNTINGTON, INDIANA, U.S.A.

ALSO, MIXERS—SPREADERS HOT AND COLD PLATE PRESSES

Save Up To 80% On Sandcloth Costs

*Patented

WITH THE PEARSON MODEL A SANDER*

Many plants have reported a saving of 60% to 80% on sandcloth in sanding irregular shapes with the Pearson Model A Sander. Motor shaft tilts from 0 to 90 degrees permitting head to fit beveled moulding angle perfectly. Sands one or more stepdowns at the same time eliminating several costly operations. The sanding of inside radii of circles and very flat tapered moulding is another cost saving feature of the Model A Sander. It is one of the fastest and most efficient sanders for irregular shapes on the market today.

Standard equipment includes 7 metal heads and 14 cushions made of the finest grade rubber. Length of cushions range from ¾ to 4 inches; outside diameters, 3¼ to 7 inches. With the Pearson Belt attachment, the Model A can be converted to an all purpose sander at a small additional cost.

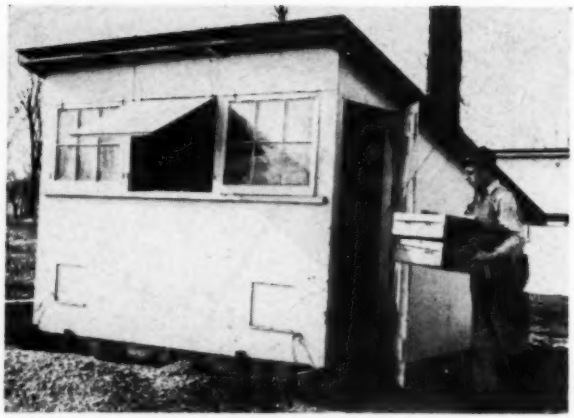
Faster, Smoother Sanding With The Pearson Block and Edge Sander

Sands straight mouldings and round corners in one simple operation. Belt can be removed and by attaching Pearson (Patented) metal heads, this versatile sander can be used as a "straight-up" spool sander. Motor can be raised (or lowered) up to 4 inches. Equipped with 1½ H.P. motor, 4 and 6 inch drive pulleys, belt, and Gregory Butt Block complete with felt cushion shaped to fit any one mould. Length of belt is 19 feet; table 22 inches wide. Overall length is 11 feet.

WRITE FOR FULL
PARTICULARS TODAY

Also manufacturers of Waterfall Belt Sanders and Grill Sanders

PEARSON SANDING MACHINE CO., INC.
HIGH POINT, N. C.



Purdue University is the source of the design of this prefabricated plywood poultry brooder house. The agricultural department at the university recommends sides of 3/8" waterproof exterior plywood. The brooder which is light and portable is built on runners. Draft-free, the building makes controlled ventilation possible.

The preponderance of effort by big manufacturers of prefabricated buildings has been given to home building. They have left the farm buildings to the smaller more localized manufacturers.

Farm building designs vary throughout the country according to geographical location, climate conditions and the customs of the community. Under all conditions and in various parts of the country, the combined findings of various research and testing projects show clearly the more important advantages of plywood construction. This is becoming more evident in the light of modern farming practices. Although there are some that need to be convinced, I personally believe that the very inherent properties of plywood, its lightweight, strength, large panel size unquestionably afford opportunity of superiority over previously used materials for farm buildings. Particularly is this true of exterior type of plywood which is so well suited to farm applications.

Plywood silo in construction. Laminated hoops and stiffeners provide the only framework needed for the structure. The plywood walls are 3/8" exterior type and are to be painted on the outside and covered on the inside with an asphalt coating.

A typical illustration is the use of portable chicken and hog brooders. It has been found, at least so I am told, that the broods in either case—chickens or hogs—are healthier and more profitable to raise if the structures housing them are moved at specified intervals. When the brooders are made of exterior plywood they are considerably lighter than those made of other construction and moving them is therefore simplified.

Accurate glue joints

. . . direct from the saw!

High speed rough sawing, or high speed precision accuracy in cutting straight and hollow joints, it's all one to the G. M. Diehl No. 750 Rip Saw.

For wherever it replaces other equipment, this massive, precision-built machine is setting efficiency and production records. The No. 750 incorporates all the proved features of its predecessors plus many improvements, such as wider tables, higher standard speeds and friction bearings throughout.

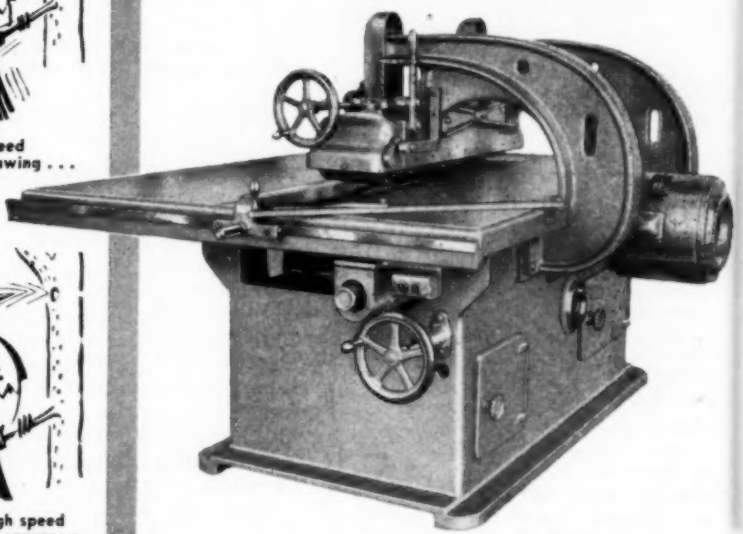
The massive welded base absorbs vibration. All driving equipment is protected from sawdust. The heavy pressure arms are capable of maintaining pressure with a 1500% overload, to assure positive precision at all times.

These are a few reasons why the No 750 is becoming the standard in heavy-duty rip sawing, just as was its predecessor, the Diehl No. 75.

See your representative, or write the factory today, for complete details on how to obtain accurate glue joints direct from the saw—with the Diehl No. 750.

High speed *rough sawing . . .*

. . . or high speed *precision accuracy*

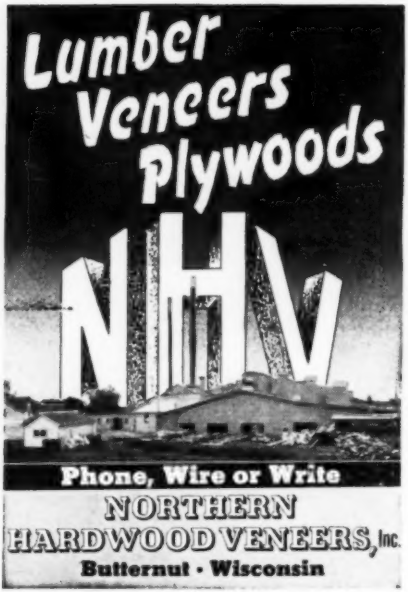


G. M. Diehl No. 750 Rip Saw

On the Banks of the Wabash

THE G. M. Diehl MACHINE WORKS, INC.

WABASH, INDIANA • U. S. A.



CLICK'S VENEER TABLES

For Manufacturers, Dealers —Anyone Who Works With VENEER, PLYWOOD, CUT LUMBER, BOXES, Etc.

A handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

Users tell us it pays for itself in a month in time saved and errors eliminated.

SEND FOR YOUR COPY TODAY

ONLY $10.00 POSTPAID

MRS. A. GRAHAM CLICK
538 W. Main St. Elkin, N. C.

A 1,000 bushel circular, plywood grain bin. The outside wall and roof are made of 3/8" exterior panels. The walls are glued together in one operation, then bolted together in a continuous strip and wrapped around horizontal laminated ribs.

Then too, as the plywood buildings are much more rigid, they withstand the terrific stresses they are subjected to when skidded over rough ground.

Of maximum importance in all respects is the minimum lineal footage of joints resulting from plywood construction. This is true regardless of the type of building—portable brooder or large barn. Here indeed is one important feature in favor of plywood. By using it one is assured of warm, draft-free buildings with few cracks: areas that habor insects and invite moisture. And finally, being wood, plywood is an excellent insulator.

We could, and probably will in a future issue, describe in detail a great many other farm structures prefabricated with plywood. One point that has come in for considerable discussion since storing grains has become a "must" throughout the country, is whether a plywood bin will stand the strain and last as well as an all steel bin. The answer, the result of tests, is "yes." The time element we do not as yet have

an answer for because the competitive bins under test are still in about equally good condition. A little rust is starting to show on the metal bin and the plywood one has peeled slightly in a couple of spots. As for the strength factor, the metal people thought they had us licked with a water test. They filled both the metal and plywood bins, which were the same size, with water. The two bins performed equally well although the metal one leaked slightly. The plywood bin's circumference deflection at the bottom with the water eight feet deep was only 3/4". The walls were made of 3/8" exterior plywood. Grain, which it was designed to hold, would exert far less pressure than the water.

Illustrations with this article show several of the most generally used farm structures which are in constant demand today. We believe they represent an open field for prefabricators and what is more—a profitable one. In knock-down form these buildings can be sold through the thousands of lumber dealers all over our country. I would like to hear from those interested in going into this business as well as those already in it. We have inquiries for such farm structures so if you are making them, even on a small scale, drop me a line.

TENTH CONVENTION

The tenth annual convention of the National Plywood Distributors Association will be held at the St. Francis Hotel, San Francisco, California, June 22-24. The program is aimed at the objective—greater profits from maximum volume. A special feature is the Hawaiian Holiday. Accommodations have been reserved for an N.P.D.A. party of 40 who can spend a week in Hawaii.

Historians may refer to the present as the "Age of Chiselry."

AMERICAN STREAMLINED COMB GRAINED VENEER

Mfgd. under Process Patent No. 2,261,497, and Lathe Apparatus Patent No. 2,397,110

We are now in production in our new plant, using most modern methods, equipment, and techniques to manufacture door stock in all thicknesses.

HIGHEST QUALITY
OAK, — MAPLE, — POPLAR,
SILVER ELM & WALNUT
SLICED AND ROTARY CUT
VENEER

(In Single Ply Only)

HILL BROTHERS VENEER COMPANY INC.

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Safety Goggles

Keep You on the Safe Side

Style TAW50 for heavy duty with

- **WILLSON Super-Tough® lenses**
- **Comfort-fitting eye cups**
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More than 300 other Eye and Respiratory Safety Devices carry this trademark

WILLSON®

Dependable Products Since 1870

WILLSON PRODUCTS, INC., 123 Thorn Street, Reading, Pa.

SAFETY AWARD

For the second consecutive year, the title "Safest Woodworking Plant in Ohio" was awarded to The American Box Co., 1900 W. 3rd St., Cleveland, Ohio, at the 21st Annual Greater Cleveland Industrial Safety Campaign banquet, held recently.

The safety award is a yearly citation approved by the Industrial Commission of Ohio, Division of Safety and Hygiene, and the Greater Cleveland Safety Council.

The firm is Cleveland's largest manufacturer of wooden containers, and one of the nation's "big five."

We have a lot of people revolutionizing the world because they never have had to present a working model—**C. F. Kettering, SAE Journal.**

SAFETY --- Is the Responsibility of Top Management

By Leonard R. Steidel

THE success of any safety campaign depends primarily on top management. Top management must devote time and energy to making everyone in the plant safety-minded. Top management must show, by both word and deed, that safety is every bit as important as low cost, high quality, and efficient production.

If any of you wish that your top management were more safety-minded, here are a few suggestions that may be helpful:

1. Periodic reports should be submitted to top management showing the cost of accidents and injuries.

2. Comparative reports should be submitted comparing your safety records with the best in the industry.

3. Top management should be requested to donate awards for plants or departments with outstanding safety records.

4. You should prepare statements of policy for top management on safety and ask that they be issued from the chief executive's office.

5. Special reports on serious accidents. Suggestions for remedial measures should accompany such reports.

6. Top management should be asked to commend plants and departments with outstanding records. Safety is a responsibility of management, and no organization can maintain a safe plant until that fact is recognized.

Regardless of the industry, the type of operation, or the occupation, accidents can be prevented by the proper attention to all possible preventable measures. In management is vested all the authority, the determination of policy, and executive direction required to install the necessary preventive measures. From management must come the drive for safety. Accident prevention must be given just as continuous attention as is given to other important matters such as, cost, quality, and production.

Every executive worthy of the name is interested in costs and the prevention of money losses to his company. Every accident, every injury involves a financial loss of some kind. When an employee has an injury he should, of course, be treated regardless of how minor it is, and he will in every case lose time from work for the treatment. It is also possible for an employee to be involved in an accident without in-

juring himself. Here it can be clearly seen that heavy losses do occur.

Let us take the case of an employee who was adjusting a machine in motion, a typical unsafe act that could lead to injury. However, this time there was no injury. The wrench slipped and fell into the machine breaking a vital part. Obviously, this type of accident can cause severe interruption of the production schedules with consequent losses.

Safety is good business and the techniques of accident prevention must be mastered by every business organization. Every supervisor must be taught the fundamentals of safety. As spokesmen of management, they are in a position to let the employees know that a company is not cold-blooded and ruthless.

Here are some of the devices we use with excellent effect:

1. Company policy calls for monthly safety committee meetings at each plant composed of employees and supervisors from various departments.

2. All supervisors are required to hold departmental safety meetings with the employees in all departments where it is feasible to do so.

3. The corporation sponsors an interplant safety contest and top management representatives award trophies to the winning plants at special ceremonies in the plants.

4. The corporation sponsors a safety slogan contest and donates prize money which goes to the employees submitting prize winning slogans.

5. It is company policy to act quickly on the elimination of all safety hazards that may be brought to light.

6. When injuries do occur, we have well equipped first aid rooms at all plants and registered nurses in attendance to treat employees. Trained first aid attendants are available for odd shift employees and also for those plants where it may not be feasible to have a registered nurse.

7. Plant safety programs are built around a safety plan originated and introduced by top management. This plan includes a set of suggested safety practices and health rules that are based on long experience and careful study.

Briefly, here are some of the more imporant steps that every management should take to prevent accidents:

1. Provide a safe plant, equipment, and tools.

2. Safeguard all machinery.

3. Prevent the installation of any new machinery or equipment unless it is in a condition safe to use.

4. Plan and arrange each process and operation in a safe manner.

5. Maintain a system of inspections to discover and eliminate all hazards and unsafe practices.

6. Maintain an accident prevention training program for all supervisors.

7. Maintain an active program to train and educate all employees in safe operating methods.

8. Investigate every accident to determine how best to prevent a recurrence.

9. Report all injuries promptly to the proper authorities.

The unsafe physical conditions in a plant are the responsibility of management, and management has the power to improve conditions to the point where physical hazards are eliminated. The cost of accidents is always greater than the cost of preventing them. So you see, the elimination of physical hazards to assure safe performance is within the power and financial means of any organization able to continue in business. The elimination of physical hazards is the most easily accomplished part of the overall picture of accident prevention.

WE HAVE *Failed* AFTER 75 YEARS
... TO SOLVE ALL NAILING PROBLEMS

But THOUSANDS OF PROBLEMS PREVIOUSLY CONSIDERED IMPOSSIBLE HAVE BEEN SOLVED BY . . . . . .

DOIG AUTOMATIC NAILERS

DOIG NO. 45-20-16

NEW FEATURES

A. Wheel on left allows operator to adjust back gage from operating position.

B. Solenoid trip permits operator to trip machine at any position desired.

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STANDARD DOIG FEATURES

1. Anti-friction bearings
2. Three separate motorized drives
3. Nail feeder to handle nails from 1 to 3 inches without additional parts required.
4. Nail feeders to give 12 separate nailing combinations.

WRITE TODAY . . . we invite your requests for full details

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Management must also insist on the elimination of unsafe work habits. This is the most difficult part of safety, as it involves the education and training of employees and supervisors. Therefore, it must provide for the safety training of employees, and high level supervision. This is necessary to assure a level of employee performance free of unsafe work habits, and adherence to established safe procedures.

Let us examine the relationship of safety to modern quantity production methods. Quantity production depends upon careful planning and control over all operations. Accidents and injuries occur when plans or operations are faulty, therefore, a high degree of safety is essential to quantity production.

Safety must be an integral part of each operation. The truth of this statement has been demonstrated with us again and again by comparing the injury rates with the day by day production curves. The tendency of injuries to cluster around the valleys in the production curves is well marked.

It might seem that this relationship is not applicable to work not directly connected with production. I mean for instance, maintenance and repair, yard and general work, and warehousing. It applies in these departments also. Just analyze the accident rates in such departments and study their relation to over-all production. Since most injuries are of an accidental origin, it becomes apparent that production suffers whenever employees are injured. So you see we help production when we prevent accidents and injuries, and for this reason it seems perfectly obvious that safety must be under the control and close observance of management.

At this point, let us summarize what has been said by listing the fundamentals to good accident prevention performance.

1. **Proper management attitude.** Management must be intensely safety minded and dynamically interested in the safety program. Accident prevention cannot be divorced from production. It must be a part of the day to day thought and action of each member of the supervisory force.

2. **Elimination of physical hazards.** To discover and eliminate physical hazards is a must, for without this we cannot expect the employees to cultivate safe work habits or to follow safe procedures.

3. **Safety training of employees.** Employees must be trained in safe methods and all supervisors must be constantly on the alert to discover and eradicate unsafe practices as they arise.

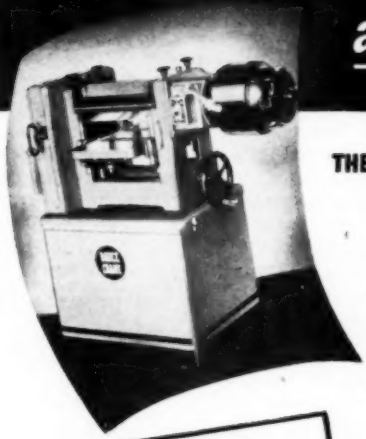
4. **Organization for safety.** Regardless of the form a safety organization may take, its purpose must be to develop and maintain teamwork for safety throughout the working force, so that there is united accident prevention effort.

Management's responsibility for safety can be fully expressed only through executive leadership. Unless the chief executive supplies the leadership for safety, it will be considered of secondary importance with the result that a high level of safety performance will not be achieved. There is no substitute for executive leadership. In all cases where exceptional safety records have been achieved, top management has provided the leadership and has shown a personal interest in safety.

Top management must not dodge its responsibility for safety by giving it to a safety man or others and then washing its hands of safety. Management must delegate its safety responsibilities right down the line to the lower levels of supervision so that safety and production will operate simultaneously down the line to the lowest levels of

A HEAVY-DUTY PLANER OF PRACTICAL CAPACITY

at a Sensible Price!



THE BOICE-CRANE 12"x4" THICKNESS PLANER

Includes every feature, but costs a hundred dollars less than planers only slightly wider. All the capacity average shops use, at a saving of 30% under the next larger size. Handles jobs impossible with larger outsize planers. Without butt-feeding, it planes pieces down to 6½" long and hard wood down to as thin as 1/16", smooth as silk and to a thousandth of an inch precision, without tearing. Saves big money by salvaging short and thin scrap.

OVER 50% FASTER THAN SIMILAR UNITS

Powered for output of 14 feet per minute. Has a massive one-piece main frame and the extra weight bolted-up frames lock for long, accurate service. Thousands of installations date back 15 or more years. Machine Serial No. 1 still operates daily, having planed millions of feet of hard wood.

STEADY, POWERFUL, GROOVED STEEL INFEED ROLL! FINER FEED MECHANISM ELIMINATES COSTLY MAINTENANCE!

No troublesome clutches or double-worm reduction gear overly vulnerable to intermittent strains and shocks in feeding stock. Simplified, quieter feed gear fully cushioned against jamb-ups in feeding that cause others to fail. Instant feed control without stopping motor. Power driven rolls in bronze-bushed self-aligning journals—also automatically adjust when work thickness varies—an exclusive feature.

SIMPLE, EASY BLADE SETTING

12¼"x20" table. Thick walls and exceptionally well ribbed table casting stays flat and true. Two table idler rolls—often omitted in inferior machines.

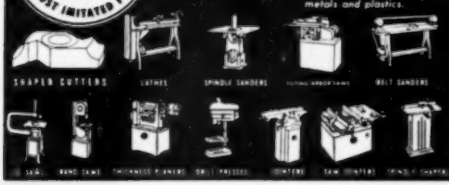
SAFER, SMOOTHER OPERATION

Less power required. Choice of 1½ and 2 h.p. direct to cutterhead or V-belt motor, engine or lineshaft drive. Bench or complete floor type units.

OPERATE THE BOICE-CRANE PLANER AND YOU WON'T BUY ANY OTHER!

BOICE CRANE — FOR 40 YEARS AMERICA'S MOST IMITATED POWER TOOLS

AVAILABLE NOW! *...through industrial supply distributors in most cities. No long waits for delivery. High quality, low cost tools for cutting, shaping, drilling and finishing wood, fibre, metals and plastics.*



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FIELD
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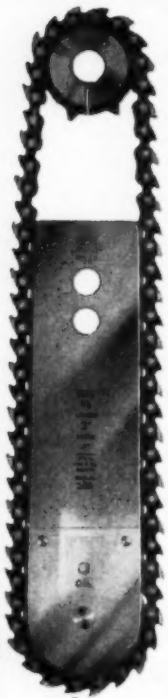
CHAIN MORTISE CUTTING EQUIPMENT



SUPERIOR chain mortise cutting equipment made possible through Field research and experience . . . Many profit making improvements which you can test for yourself. Cut costs . . . raise quality . . . increase production with Field mortising equipment.

More than 90 standard sizes of cutting equipment to assure you an excellent product and interchangeable replacement parts.

When ordering, please specify:

1) Size of mortise (width and length)
2) Make of your machine (manufacturer's name)
3) If reordering, give marking on guide bar.

Write for information on our chain grinders for sharpening your mortise chains.

Complete mortising equipment at . . .

NEW ENGLAND'S WOODWORKING MACHINERY DEPOT

WILLIAM H. FIELD CO.
327 Dorchester Ave.
BOSTON 27, MASS.

supervision. In this way the chief executive will be in a position to know what is going on insofar as safety is concerned, just as he knows about production matters and other important phases of his business.

Management must assume the responsibility for safety if it wants to operate its business without costly accidents and without injuries to its employees. Management must do this or suffer the costly consequences.

Mr. Steidel is production manager of the Cooperage Division, National Distillers Products Corp., Memphis, Tenn. This speech was first presented at the 1951 National Safety Congress and is reprinted with permission.

The End

MEMBERSHIP DIRECTORY

The 1952 edition of "Where to Buy," the membership directory of the West Coast Lumbermen's Association has been issued and is now available for distribution from the association at 1410 S. Morrison, Portland 8, Oregon.

The record production of the saw mills in the Douglas fir region of western Washington, western Oregon and northern California is reflected in the largest membership ever shown in the 48-page directory. Included are pertinent details on each of the 297 operations named, all designed and arranged to help the lumber buyer. Information covers capacity, facilities, species and lumber items manufactured, as well as a growing list of lumber by-products.

A.F.P.I. REPORT

A decade of progress in practical forest management is measured in the annual report for 1951, published this month by American Forest Products Industries.

"During the year just ended forest production was at or near an all-time

high in the United States," the report states. "This nation, with less than one-tenth of the earth's forest area, continues to produce more than two-fifths of the world's lumber and woodpulp and well over half of its plywood. Privately owned, tax-paying timberlands, operated under a free forest economy, provided nine-tenths of that wood harvest."

The report summarizes the growth of the industry-encouraged "Keep Green" program in forest fire prevention and points with pride to the nation's nearly 25,000,000 acres of certified tree farms.

TECO GLUE COURSE

Nine more men from the wood using industries have completed the five-day, intensive study of wood lamination conducted by Timber Engineering Company at its research laboratory. This is the fourteenth group that has taken the special course of instruction in wood adhesives and their practical application in military and civilian production.

Started in 1949 by Carl A. Rishell, Timber Engineering's director of research, at the request of the furniture industry, the courses have been broadened to meet the needs of producers of laminated marine timbers and other glued wood products in high demand by defense agencies. The latest course, completed February 29, brought the total to 117 representatives of industry and military agencies who have received the special training.

The trainees were instructed in the characteristics, uses and handling of modern glues; the detection and prevention of faulty glue lines; and in tests prescribed by military and commercial specifications. High frequency gluing was an added feature, and special attention was given to glues for boat, ship and barge construction.

If all the cars in this country were put end to end, 90 percent of the drivers would pull out to pass the car ahead.

FREE!

"MACHINE KNIVES" CATALOG

Write today for your free copy of 2-color catalog illustrating and describing Taylor-Stiles machine knives. Included are fly and bed knives, planer knives (of laid carbon steel and thin, high-speed steel), moulding knives, and others.

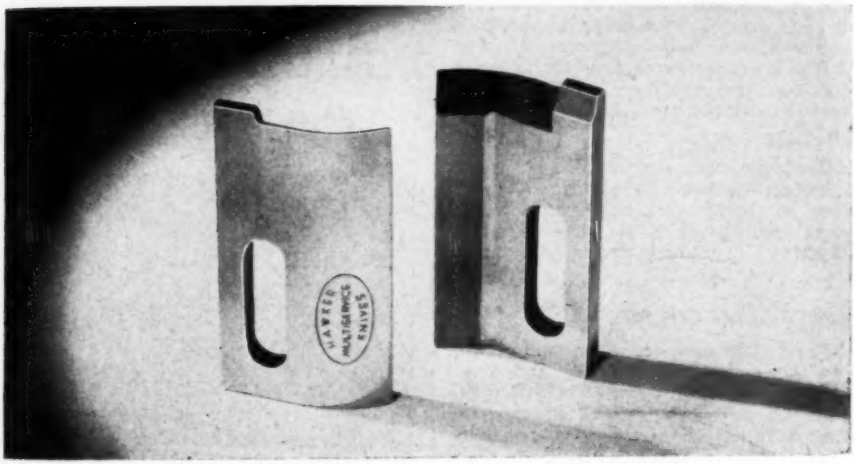
We have manufactured machine knives for 88 years. Users of our knives include many of America's leading manufacturers.

In our line, described in this catalog, are laid carbon steel, solid carbon steel, and high speed steel knives.

Write for your copy of "Machine Knives" today.

TAYLOR-STILES
& COMPANY
52 Bridge Street Riegelsville, New Jersey

double production between grinds



with Hawker multi-service knives

These beautiful Hawker dowel cutting knives are your best buy for *many* reasons. Here are six of them: (1) You get double production footage between grinds. (2) You cannot buy knives made of finer steel. (3) Hawker knives are the only knives *precision ground on all surfaces.* (4) Hawker multi-service knives come in balanced, match-ground sets,— they cut faster and yield better finish. (5) When requested, a precision metal grinding template will be furnished — no guessing to obtain factory-perfect performance on regrinds. (6) The cost is *reasonable* — our stock is complete — you get *immediate delivery.* Order your set today!

HAWKER MANUFACTURING CO.

1425 KEOWEE STREET, DAYTON 4, OHIO

MACHINE TOOLS FOR THE WOODWORKING INDUSTRY

TENONER MACHINE

The Millbury Machine Co., Millbury, Mass., has a 4-page brochure describing their deluxe floor model, single end ball bearing tenoner. This light tenoner is especially adaptable to the smaller woodworking shop.

The machine is equipped with a three horse power motor, arranged with a magnetic switch box with remote control. The cutters are so arranged that one cut is just about completed before the next cut begins. By this method the manufacturer states that the motor is never over-loaded which eliminates the necessity of more than one motor for any type of tenon or cope work required of a light single end tenoner. The bulletin describes the machine fully and gives complete specifications.

BUSS PLANER

Bulletin 61 from the Buss Machine Works, Holland, Mich., describes No. 4-L, models H and M of their single surface planer. The manufacturer states that this is a relatively inexpensive surfacer that will handle the bulk of all planing requirements. It is sturdy, compact and fast. On production work it will plane 4/4, 6/4, 8/4 lumber in random lengths and up to 2,000 board feet per hour.

The machine is precision built and combines a number of features such as micrometer central control of back pressure bar, instant micrometer control of the lower rolls, shearing bar and others described in detail in this bulletin. The planer is being used in woodworking plants of all kinds — those manufacturing furniture, interior trim, panels, airplane parts, lumber mills and pattern shops.

WOODS MOULDERS

A bulletin from the S. A. Woods Machine Co., Boston 27, Mass., describes their 133 and 134 series of "quick-change" moulders. The No. 133M is a wide open type in the "roll bed" series. The 134 is a "lag bed" type. Both series come in four and five heads.

This bulletin illustrates both series and gives complete specifications. It shows the frame, side head and other construction features, as well as a feed chart for motorized or belted moulders.

BAND RESAW BULLETIN

Bulletin No. 54-1, just released by the McDonough Manufacturing Company of Eau Claire, Wisconsin, contains full information on the improved McDonough 54" vertical band resaw. Fully described are such new features as McDonough's exclusive gear type feed roller drive. Detailed specifications and export data are also provided.

Only the best SAW SHARPENING can give you top-speed production. The Foley Saw Filer quickly puts old saws with dull and irregular teeth back in perfect condition—and keeps them perfect! 25% to 40% increase in production is frequently realized with Foley-filed saws.

ONE machine files cross-cut circular saws, band saws, hand saws.

30 DAY TRIAL OFFER

permits you to use a Foley Saw Filer in your own shop. You can't lose on this offer—write or send coupon.

FOLEY *Automatic* **SAW FILER**

FOLEY MFG. CO.
3351 N.E. 5th ST.
MINNEAPOLIS 18, MINN.

Please send literature, and details of your 30-DAY TRIAL OFFER.

Name .....

Address .....

SERVICE MANUALS

A 50-page illustrated service manual to enable users to protect their investment in Diehl tapeless veneer splicers has been developed by the G. M. Diehl Machine Works, Inc., Wabash, Indiana, manufacturers of precision production woodworking machines. The manual is the first of a series covering the line of Diehl moulders, rip saws, cut-off saws, glue jointers and edge moulders, and veneer jointers and edge gluers.

The booklet contains sections giving step-by-step direction for installation, lubrication and cleaning, general and special operating procedures, general maintenance, adjustments on the pressure bars, and installation of parts. Photographs clearly illustrate the various steps.

WESTERN PINE PUBLICATIONS

A new, up-to-date listing of the complete file of Western Pine association promotional, educational and technical literature for use by the construction, lumber and other wood using industries and by educators has been announced.

The new schedule of publications lists 99 separate publications with a short description of their contents and application in the consumer, building, dealer, technical and education fields. It also contains an order blank with a convenient checkoff for specification of quantity and imprinting, if desired. Dated Jan. 1, 1952, the schedule replaces a previous issue of April, 1951.

Copies may be secured without charge from Dept. SP, Western Pine Association, Yeon Building, Portland 4, Oregon.

ONSRUD AIR TURBINE MOTOR AND ROUTERS

Onsrud air turbine motors and routers with attachments for use in routing wood, plastics and non-ferrous metals,

are completely described and illustrated in a new eight-page bulletin. The bulletin, No. 1138, has just been issued by Onsrud Machine Works Inc., 3900 Palmer St., Chicago.

The air turbine motors are precision built units available in capacities from ¼ h.p. up to 2 h.p., with speeds of 22,000, 30,000, or 50,000 r.p.m.

The portable routers are supplied in several standard kits, ready for use. Complete specifications, extra equipment available, and typical application views are included in this bulletin.

CHISM & BURTT BROCHURES

Three pieces of literature are available from the Chism & Burtt Machinery Co., Inc., 26 Bennett St., Lawrence, Mass. One of these describes an air squeezer which gives 1200 lb. of pressure with 100 lb. of air. It is equipped with a foot pedal so both hands are free to hold stock. Pressure on matching is in proportion to foot pressure applied.

A second piece shows their motorized fitting or edging saw which is V-belt driven. The machine can be furnished with or without motor.

Another saw is illustrated in the third brochure. The saw arbor runs on standard ball bearing pillow boxes, and is driven with V-belt drive. The machine can be furnished with or without motor.

NEW PLANT FOR BLADE

The Blade Manufacturing Company, 909 West Third Avenue, Columbus, Ohio, has announced an expansion of plant facilities currently being completed.

Housing a complete, new heat-treating installation of the firm's line of wood and metal cutting circular saw blades, the new concrete block building constructed as a part of the present plant structure covers 2400 square feet. This addition will also provide space for engineering and testing operations.

DEDGIE—the Planer Boss says:—

"Little girls are always leaping. . . . 1952 just removes the age limit."

That reminds us that there have been many leap years since 1885 when mills began to use

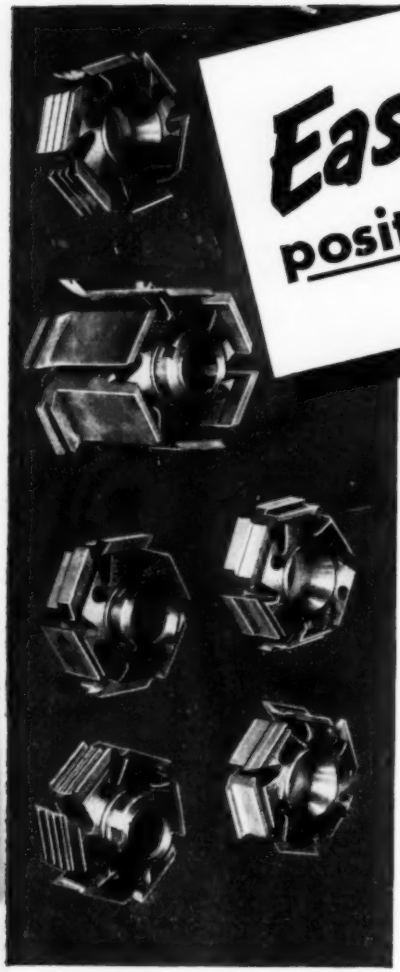
DETROIT KNIVES

Planer—Moulder
Veneer—Clipper
Shaper Steel

Mills throughout the U.S. have for years obtained smooth cutting and high production from DETROIT KNIVES. Try them on your next order.

Better knives since 1885

DETROIT EDGE TOOL CO.
6570 E. NEVADA
DETROIT 34, MICHIGAN



Easy set-up . . . positive alignment

• Diehl's complete line of standard cutter heads includes a wide variety of vice grip heads. Diehl vice grip heads are easy to set up, give positive alignment, and have greatest gripping power for retention of dovetail cutters. A few of them are illustrated, both with and without Diehl's self centering sleeve. Diehl vice grip heads are safer and more satisfactory for heavy cuts and high frequency spindle speeds. Diehl heads are rugged . . . they *stay* on the job!

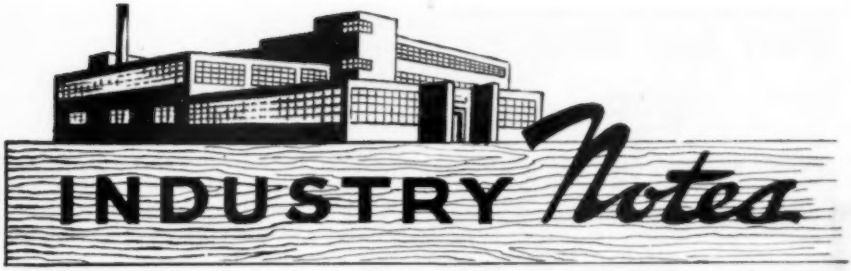
And if your job requires special heads, Diehl can design and build them. Diehl can meet *your* cutter requirements. Ask for our latest cutter catalog.

CUTTER DIVISION

On the Banks of the Wabash

THE G. M. **Diehl** MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.



CLEMENT LUMBER ANNOUNCES NEW PLANT

The Al Clements Lumber Co. of Eugene, Oregon, producers of Douglas fir kiln dried clears and mouldings, are completing a new 8,000 square ft. cut-up room for the manufacture of cut-to-length overhead door stock in both vertical and flat grain Douglas fir clears.

This new plant will also increase the capacity considerably in rabbetted jamb stock sets and miscellaneous ladder parts. The new production line consists of four new air operated cut-off saws, feeding belt conveyors towards moulders, equalizers, and boring machines. It was designed for a production in excess of 800 M board feet per month of cut stock. This unit will operate in addition to the company's already million feet per month industrial clear section. The new building is 40′ x 200′ constructed of concrete, prefabricated wood trusses and steel siding. Production is expected to be in full capacity by April 15.

WIREBOUND BOX ELECTS

Joseph A. Sowell of the T. R. Miller Mill Co., Brewton, Alabama, a participant in the wirebound shipping container industry for 27 years, was elected president of the Wirebound Box Manufacturers Association at its annual meeting at the St. Francis Hotel, San Francisco, Feb. 26 and 27. He succeeds A. L. Whiton of Chicago.

The wirebound shipping container industry, which serves both industry and agriculture, is now a $100,000,000-a-year business with an outlook of steady expansion. The revelation that the industry had joined the "$100,000,000 Club" of American industries was made at the annual meeting.

Joseph A. Sowell (right) of Brewton, Ala., newly elected president of the Wirebound Box Manufacturers Association, receives the congratulations of his predecessor, A. L. Whiton of Chicago.

New government specifications for the packing of defense goods for shipment, both domestic and export, and a strong trend throughout the fresh fruit and vegetable industry for more modern and more scientifically engineered shipping containers for perishable commodities indicate, speakers agreed, that the wirebound shipping container industry wil continue to expand at a healthy rate.

F.P.R.S. MEETINGS

Sectional meetings for the Forest Products Research Society are scheduled for May. The Northeast Section, under the direction of Acting Chairman Frank Parrish and Acting Vice

WANT GLUE $AVINGS?

USE GLUETOOL

Cheaper . . . Faster . . . Better

Gluetool tank for 1 or more operators

GLUETOOL is the biggest news in gluing operations because only GLUETOOL makes practically all cold glue application twice as fast, twice as easy . . . and better than old-fashioned methods.

Skilled work can be done by UNSKILLED labor. Handy-grip, automatic spreader heads — for all size dowel holes, grooves, mortises and flat surafces — put the right amounts of glue in the right places . . . with no muss. Can be used anywhere by one or more operators simultaneously.

Yes, old-fashioned gluing methods cost you money, eat up profits that would be yours if you used GLUETOOL. Why endure this needless cost? Get GLUETOOL! See for yourself how GLUETOOL *saves* more while it *serves* better. Let us give you all the facts. Write today for complete details.

Handy-grip, automatic spreader heads

GLUETOOLS, INC.

1930 N. Meridian St. Indianapolis 2, Ind.

Chairman Charles Lockard, each of whom has moved up one notch in the Northeast organization with the transfer of former Chairman Fred Dickinson from Yale to the University of Michigan, plans for a meeting on May 22 and 23. The meeting will be held in the Yorktown Hotel, York, Pa. Subject for the meeting is "Materials for the Forest Products Industries" and will cover abrasives, adhesives and some aspects of wood construction.

The Northern California meeting will be held on May 9 at San Francisco. They hope to have President-elect Kenneth Chesley meet with them.

On April 15, the Great Lakes Section meets in Grand Rapids. The two technical sessions are planned for a round table type of discussion. One section will cover "The Relationship of Machinery Maintenance to Quality Production in the Rough Mill." The other discussion will cover the subject "Veneer Pressroom Problems."

ROCKWELL ACQUIRES NEW COMPANY

W. F. Rockwell, Jr., president of Rockwell Manufacturing Company, has announced the acquisition of the Deluxe Saw & Tool Co. and the Karbide King Tool Corp.

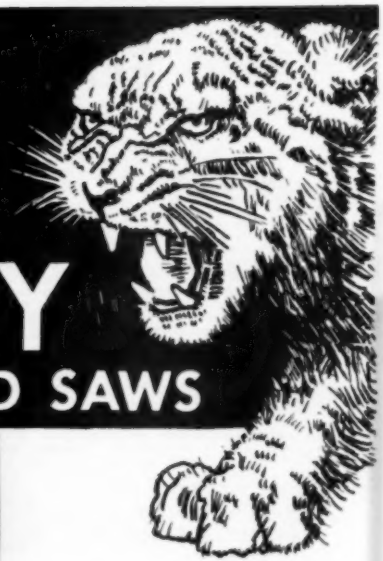
The newest members of the Rockwell family of companies started in business in 1945 and operate plants in Chicago, Ill. and High Point, N. C. Beyond the new product functions of these plants they house extensive service facilities.

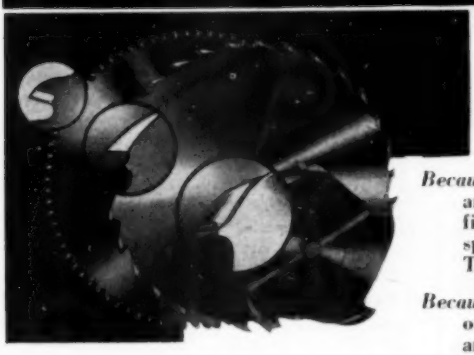
The Deluxe Saw & Tool Co. pioneered the manufacture of tungsten carbide tipped circular saws for industrial application. This new type saw guarantees longer service, more accurate cuts and smoother finishes on wood, plastic, hardboards, fibers and metals.

The Chicago plant will remain under the supervision of A. G. Feldman, one of the founders of Deluxe. Claud T. Miller will manage the High Point plant.

This brings the number of subsidiaries and divisions of Rockwell, whose headquarters are in Pittsburgh, to 19.

Why TEETH STAY SHARP *in* VICTORY CARBIDE TIPPED SAWS





Because "VICTORY" Carbide Saws are quality-manufactured with the finest Tungsten Carbide Tips, specially processed to Super-Tough Steel Blades.

Because "VICTORY" Carbide Saws outlast and outcut ordinary saws, and give 40 to 100 times more production between sharpenings.

Long steady runs . . . at high cutting speeds . . . handling difficult stock . . . with 100% greater performance between sharpenings . . . these are the advantages you get when using "VICTORY" Carbide Tipped Saws. Better finishes and lower costs are what build up profits on every job. Be sure you specify "VICTORY" Carbide Saws for fast, smooth cutting of Hardwoods, Plywoods, Plastics, Laminated Materials, rough crooked grained lumber and other tough jobs. *Write for Saw Folder and Price List.*

VICTORY CARBIDE SAW & TOOL CO.

3854 N. ASHLAND AVENUE, CHICAGO 13, ILLINOIS

Southern Representative: Memphis Machinery & Supply Company, 205 S. Front Street, Memphis, Tennessee
West Coast Representative: H. J. Komorous, 1881 Sunnyvale Avenue, Walnut Creek, California

CARBIDE TIPPED SAWS • BAND RE-SAWS • GROOVERS AND SHAPER SAWS

"Jorgensen" PILING CLAMPS

Style No. 2100 "JORGENSEN", for the most economical and convenient method to increase your edge-gluing capacity. More glued stock per pile—work clamped on both sides prevents buckling—all clamping done on same side of pile—any thickness of stock, any length, width, or height of pile without special fixtures or trucks. The work is always centered on the pile even when widths vary widely.

Style No. 70 "JORGENSEN" I-bar Clamps are a long-time favorite; the Multiple Disc Clutch zips to position, holds securely, releases easily without notches or other deformity in the bar. Carefully designed and manufactured for longest service—at no extra cost to you.

Write for Free Catalog

ADJUSTABLE CLAMP CO.

"The Clamp Folks"

418 N. Ashland Ave. Chicago 22, Ill.

FULL BALL BEARING

Completely Adjustable

UNIVERSAL JOINT DRILLHEADS

STANDARD Only with

THRIFTMASTER

Full Ball Bearing construction coupled with Thriftmaster design and manufacturing dependability assure smooth, steady, positive drillheads performance *that will last!* Priced from $208.00.

THRIFTMASTER Universal Joint Drillheads

2 to 10 (or more) Spindles . . . Minimum ½" Centers with 6" to 10" (or larger) Circle

OTHER THRIFTMASTER PRODUCTS

Special Fixed Center and Standard Eccentric Adjustable Drillheads

Write for Free Thriftmaster Catalog

THRIFTMASTER PRODUCTS CORPORATION

Division of Thomson Industries, Inc.

1038 N. PLUM STREET, LANCASTER, PA.

STANDARD UNIVERSAL ADJUSTABLE AND SPECIAL FIXED CENTER DRILLHEADS

Appointments

Promotion of **Wells H. Teachnor, Jr.**, as sales representative for the Franklin Glue Co., in the New York City and New Jersey area has been announced.

Langdon T. Williams, president of Franklin Glue, said Teachnor will advise and service industrial glue users while Harry Hallberg will continue as sales representative in metropolitan New York, specializing in small package sales through wholesale and retail outlets.

Chester B. Stem, hardwood lumber and veneer manufacturer of New Albany, Indiana, was elected Chairman of the Committee on Hardwood Research Administration at the annual meeting of the group at Edgewater Park, Miss., on February 12. Mr. Stem succeeds Omar Hilton, Vice-president of Bradley Lumber Company of Arkansas, Warren, Ark. Mr. Hilton served for five years as head of the committee which functions within the National Lumber Manufacturers Association and administers numerous hardwood research projects.

D. S. DeWitt, of Holt Hardwood Company, Oconto, Wisc., and President of the Maple flooring Manufacturers Association, was elected Vice-chairman, succeeding Mr. Stem.

Widely known throughout the lumber and veneer industries, Mr. Stem recently completed his term as president of the Indiana Hardwood Manufacturers Association. He is a former president of the American Walnut Manufacturers Association and the Veneer Association. At present, he is serving on the directorate of the National Hardwood Lumber Association, N.L.M.A. and Timber Engineering Company.

Donald E. Curtice, for the past six years superintendent of the American Lumber & Treating Co. plant at Port Newark, N. J., has been appointed General Superintendent of Plants, and will make his headquarters at the general offices of the company in Chicago.

The board of directors of the Carborundum Company has elected **Clinton F. Robinson,** president and director of the company to succeed Mr. H. K. Clark who resigned as president.

Messrs. Paul B. Brown, Clarence E. Hawke, and **William H. Wendel,** formerly managers of the Bonded Products and Grain Division, Refractories Division, and Coated Products Division respectively, were elected vice presidents in charge of their divisions.

Clinton F. Robinson

Dean B. Skillin

Dean B. Skillin has recently been appointed to the sales staff of Continental Screw Company, New Bedford, Mass. He has been assigned to the states of Indiana and Wisconsin.

The National Association of Manufacturers announced today the appointment of **Eberly Thompson,** vice president, M and M Wood Working Co., Portland, Ore., as chairman of its Conservation of Renewable Natural Resources Committee. He succeeds David Graham, vice-president, Weyerhaeuser Timber Co., Tacoma, Wash.

President William J. Grede, who made the appointment, said the committee is composed of some 140 industry executives from all parts of the country who are concerned with conserving the nation's timber, water and soil resources.

The Brooklyn Paint & Varnish Co., Inc. has announced the appointment of **Ray H. Sommer** as head of their Industrial Research Division. The position had been temporarily under the direction of Carl Englehardt, chief chemist, due to the passing of the former department head, Mr. Joseph Stivale.

POINT IT *where you want a hole . . . and* **PUSH.**

"YANKEE"

No. 41 Automatic Drill

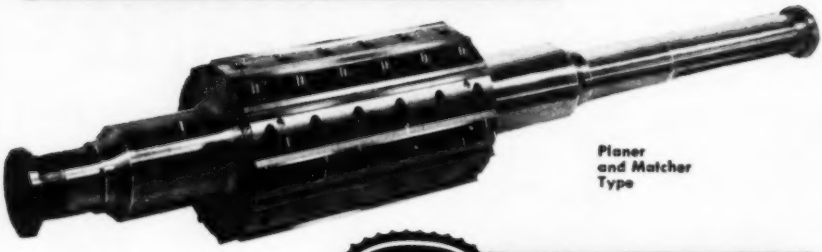
● For drilling small holes in wood, plastic or plaster. Just point and push . . . an easy one-hand job with this "Yankee" Push Drill. Handle comes back after every stroke, ready for the next push. Eight different size drills inside handle . . . $\frac{1}{16}$ to $\frac{11}{64}$ inch . . . easily inserted and removed from chuck. Chromium plated, made to give a lifetime of service.

Write for "Yankee" Tool Book.

YANKEE TOOLS NOW A PART OF STANLEY THE TOOL BOX OF THE WORLD

NORTH BROS. MFG. CO.
Philadelphia 33, Pa.

PUT NEW PRODUCTION LIFE IN YOUR OUTDATED WOODWORKING MACHINES WITH



Planer and Matcher Type

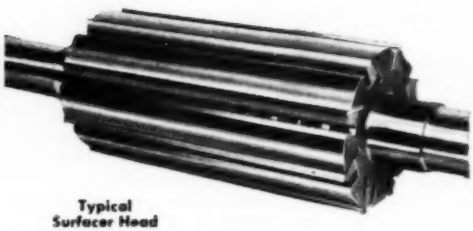
BADGER JOURNAL HEADS

FOR JOINTERS, SURFACERS,

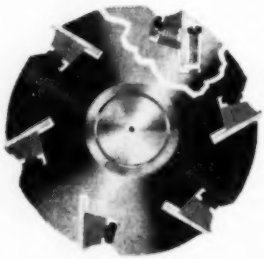
PLANERS AND MATCHERS

Badger Journal Heads are tailor-made to fit any existing machines, babbitt or ball bearing. Made of finest alloy, steel forgings, all-in-one-piece, precision machined and ground, and dynamically balanced. Available from 4 to 14" cutting circles with from 2 to 20 knives and equipped with reliable Badger High Speed Thin Knives.

Note ease of knife alignment adjustment provided by adjusting screws.



Typical Surfacer Head



REVITALIZE YOUR TIRED WOODWORKING EQUIPMENT!

Badger Journal Heads are made to your exact specifications. Our engineers will gladly assist in re-equipping outmoded machines with modern high production heads. Many conversions from babbitt to ball bearings are worked out.

When ordering, give complete information for type of machine; diameters of cutting circle, and shaft extensions; journal length; number of knives; direction of rotation and R.P.M.; type, number and size bearings to be used.

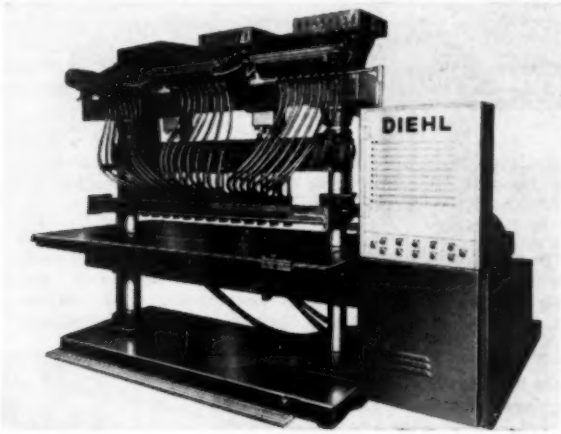
WISCONSIN KNIFE WORKS

BELOIT WISCONSIN

Engineers to the Woodworking Industry

EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

DIEHL HYDRONIC NAILER



Industry is now being offered a nailing machine with "push-button" operation, completely controlled by electronics and powered by hydraulics. This machine is called the Diehl hydronic nailer, and is being produced by The G. M. Diehl Machine Works, Inc., of Wabash, Indiana. The new Diehl hydronic nailer is particularly important to all industries manufacturing packing crates, boxes, skids, reels, pallets, and all the other wooden devices so vital to the shipping of goods and products.

The "push-button operation" feature of the nailer is centered in an electronic master-control panel, within fingertip reach of the operator. By flicking preselected switches on the panel, the operator trips high-speed solenoids for positive, split-second picking of nails from the feeders to nail chucks. On the 72" model, up to 24 nails and 10 patterns can be used in any combination. Push-buttons also control the raising and lowering of the work table.

After selecting specific nails and patterns, the operator touches a pedal, which lowers the powerful hydraulic drivers—up to 60 strokes per minute—

with steady, straight-down pressure, penetrating the hardest woods. Nail-bending is substantially reduced, and no pre-drilling is necessary.

Another feature is the diagonal thrust clinching action. Hardened-steel clinching blocks synchronize a sideward movement with an upward movement, assuring a true bending of the nail which sinks firmly into the wood, flush with the surface. When desired, the clinching action is easily disconnected.

The advanced design of the Diehl hydronic nailer greatly reduces setup and adjustment time, providing a smoother and more rapid flow of precision-nailed material. The solenoid selectors operate with equal efficiency on any size, type, or gauge nail—2d to 16d—no rotary discs are employed to become jammed or to require constant changing. Four different size nails may be used simultaneously. The only accessory changes on this nailing machine—to handle different size nails where a wide variance in nail sizes is used—are the easily-switched sets of nail chucks and the simple adjustment of the nail-feed tracks with a single control knob.

Diehl plans to manufacture the new nailer in open and closed back design, sizes 40", 48", 60", and 72" (illustrated).

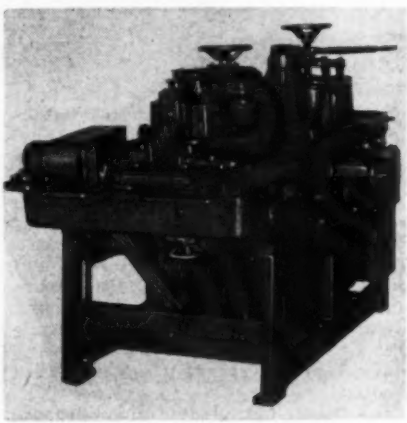
Other Diehl machines—widely used throughout the woodworking industry for precision production—are Diehl moulders, rip saws, straight-line cut-off saws, glue jointers and edge moulders, electronic edge gluers, veneer jointer and edge gluers, and tapeless veneer splicers.

IMPROVED SPEEDMOULDERS

Timesavers, Inc., 549 W. Washington St., Chicago 6, Ill., announces the new improved models 10X and 12X in their Timesaver Speedmoulder line. Now, in these models each spindle is driven by a separate motor with the power stepped up to over 40 H.P. and a new and stronger outfeed assembly has been provided.

These machines will run mouldings up to the full capacity of the machine and also surface four sides of lumber up to 4" x 12".

Easy set-up features of the standard models are incorporated in these new improved machines, such as Bridge type pressure bar supports to assure equal pressure across a 12" wide board.



Wabash

SLIDES AND FOLDING LEAF EQUIPMENT

Wabash Slides on extension tables eliminate "drooping" when extended.

There is a type of hardware in the Wabash line for every requirement. Ask about it.

FOR NEW TABLES

NOW IS THE TIME to improve extension table design. When operation is smooth and easy, tables have the added appeal and convenience today's buyers demand. Wabash Slides and Folding Leaf Equipment may be engineered to your table for smooth action and smoother production. Have your extensions and hardware "styled by Wabash experts" at no extra cost. We can help make your tables more salable.

ENGINEERING CONSULTATION BLANK

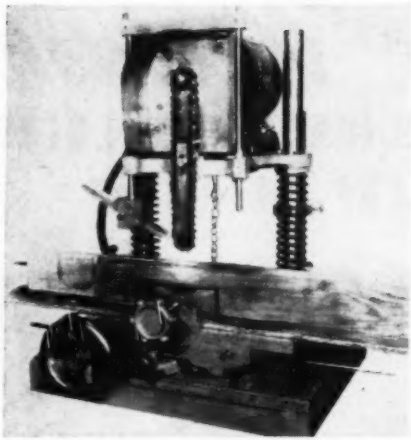
WRITE FOR *Free*

Walter of Wabash

This feature guarantees perfect sizing and a smooth finish on all work, it is said.

The accompanying picture shows the outfeed end of the 12" Speedmoulder model 12X. This model is being used in medium sized lumber operations for running mouldings, flooring, matching and surfacing. It is rugged in construction and built to take it under day-in and day-out heavy production.

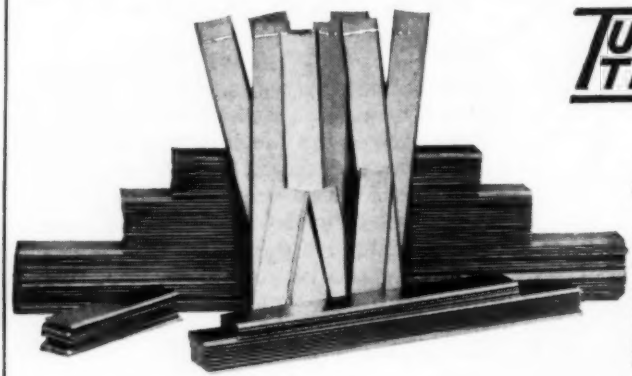
A "V" belt drive provides power transmission for each of the spindles and assures maximum power drive for the user.



CHAIN MORTISER

This U.S. bench chain mortiser is equipment usable in any cabinet, millwork or woodworking shop. The machine, we are told, can mortise complete ¼ x 1½ x 3" deep and ⅜ x 1½ x 3" deep complete. It has a compound table for longer mortises in any stock up to 2" x 6".

The machine comes complete with motor, switch, foot treadle, in and out and compound table, work and table stops. It fits any bench and weighs about 200 lb.



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Stalter High Quality of workmanship and material is always reflected in increased production with less "down-time."

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High speed thin knives are just one of the many Stalter products for the woodworking plant. For complete details,

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Commander MULTI-DRILLS

- Drills up to 8 Holes at 1 Stroke
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- Quickly Pays for Itself Many Times Over

● Commander MULTI-DRILLS are instantly and easily adjusted to handle any hole pattern within a 9" circle. Standard Extension Spindles will increase working area to 22½". Minimum center distances close as ½". Compact in design, ruggedly built, Commander MULTI-DRILLS are making BIG Savings in time and labor for woodworking plants everywhere. Special adaptations available.

Your nearby Commander Distributor has the MULTI-DRILL. Write for his name.

Write FOR CATALOG #851 which describes Commander's Production Tools

Commander MFG. CO.

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SCIENTIFICALLY HEAT TREATED • ACCURATELY GROUND
CUTS STRAIGHT • FAST • SMOOTH — STAYS SHARP

This complete new line of circular saws **UP TO 12"** in diameter, will give long, satisfactory service, excellent performance and the most value for the least cost. For use on all makes of table, bench, swing, radial arm and portable electric hand saw machines.

TYPE OF SAW	SIZE	PRICE
Cut-off	6"	$1.75
Rip	7"	2.00
Combination	8"	2.15
52, 54, 60	10"	3.15
Easy Cut	12"	4.35

TYPE OF SAW	SIZE	PRICE
Hollow	6"	$2.75
Ground	8"	3.95
Planer	10"	7.45
	12"	9.95

ALL SAWS SHIPPED POSTPAID EXCEPT C.O.D. ORDERS. SPECIFY BORE WHEN ORDERING. OR IF PORTABLE ELECTRIC SPECIFY MAKE AND MODEL. SEND FOR LITERATURE.

Each saw is individually packaged, in factory-perfect condition, ready for use.

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RUDOLF BASS 173-177 Lafayette St. New York 13, N.Y.

SPEAKERS ANNOUNCED FOR ANNUAL MEETING

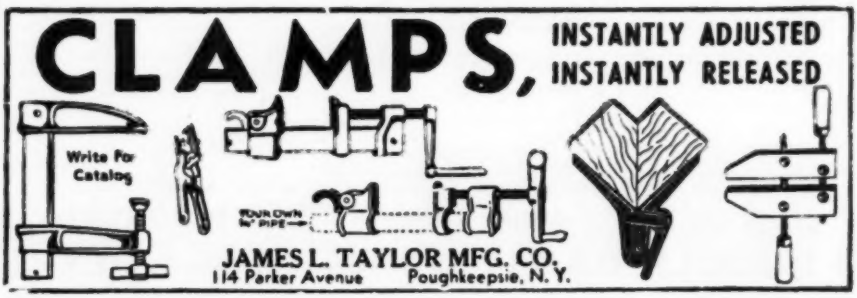
The names of two prominent Americans, one in the field of industry, the other in national and international conservation of forest resources, head the list of some 40 speakers scheduled for the sixth Annual National Meeting of the Forest Products Research Society. Site of the meeting will be the Schroeder Hotel, Milwaukee, Wisconsin, June 23-25.

Early last December, William J. Grede, president of the Milwaukee foundry firm bearing his name, was elected by more than 3,000 manufacturing executives to head up the National Association of Manufacturers for the coming year. In so doing, Bill Grede will take over one of the top industrial advisory jobs of government's National Production Authority. "Time" (Dec. 17, 1951) described Grede as a "Plain talker . . . with plenty of opinions." Bill Grede describes himself as a "foundry man or sand rat, as we call it." By selling pots and pans he worked his way through two years at the Univ. of Wisconsin, then quit to invest in a small foundry. Ever since he has been running his own business and now has 1,100 employes. His estimate of N.A.M.'s biggest job in 1952: To promote better understanding of this thing we call America and to call for a change in the financial policies of the U.S. Government."

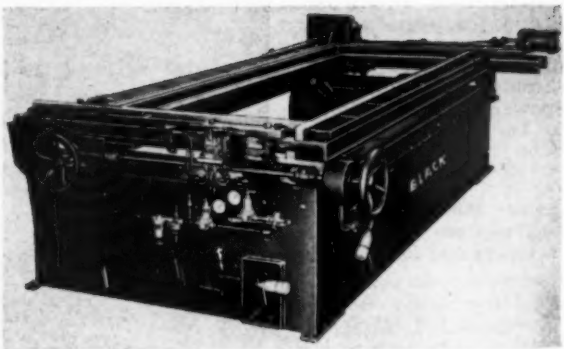
It is a big order, and fortunately Bill Grede is the broad statured kind of individual who can fill it. His message at the annual business meeting luncheon, will undoubtedly bring a new insight and clearer understanding into the workings of our competitive enterprise system, and how it functions to bring us the highest standards of production and living the world has known.

As keynote speaker at the Monday, June 23 technical session, Lyle F. Watts, Chief of the U.S. Forest Service, will set the pattern for some 40 speakers to follow. Watts is the man behind the U.S. government programs in forestry, wood research, and forest conservation. In 1950 he received the Distinguished Service Award from the Secretary of Agriculture, the highest award of that Department, for distinguished leadership in advancing the conservation of forest resources in the U.S. and the world. Watts has also taken a leading role in the development of the world forestry organization, FRO. The broad research program of the U.S. Forest Products Laboratory at Madison, Wisconsin comes under his direction.

Watts will speak on the subject "Research, the Keystone of Forest Products Management." He says, "The central theme will be built around the stake of forest management in wood utilization. I believe that intensive forestry in this country can come only with intensive utilization of the products we grow in the woods and that much more research is necessary in order to bring recent discoveries in wood utilization and those which are to follow down to the level where the products are economically feasible for manufacture."



SASH CLAMP



Black Brothers No. 200 high speed pneumatic sash and frame clamp was designed originally for prefitted and non-prefitted window sash. However, its speed, accuracy and economy have adapted it to many other new operations. Other assemblies which are being clamped in this machine include screens and screen doors, storm windows and doors, metal sash, combination door inserts, cupboard doors, and a wide variety of furniture and other frames. The machine is likewise available in a heavier model making it suitable for mortised doors and similar work.

In addition to the regular models, several optional electric and pneumatic

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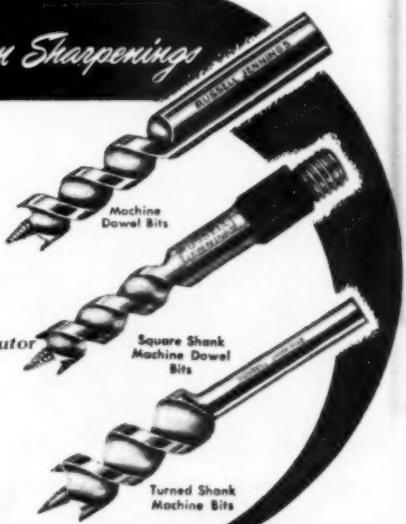
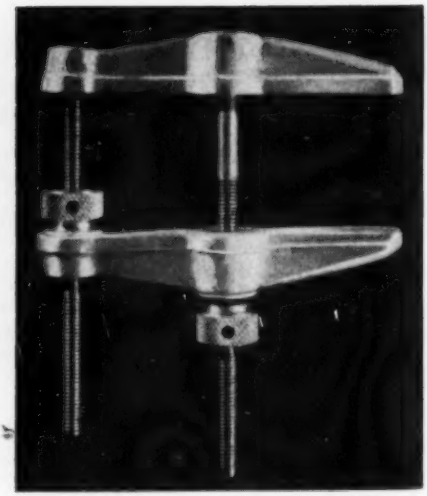


power driven adjustments are now available for the first time, we are told by the manufacturer, Black Brothers Co. Inc., Mendota, Ill. A typical arrangement with air motors for adjusting the clamp from one size to another is shown. The power driven adjustment has proved to be a real time-saver where production runs vary a great deal in size, we are told.

These clamps are offered in 15 different sizes ranging from 4' x 4' to 8' x 8' by increments of one foot in each direction.



SHOP CLAMPS

These Monarch vise action clamps are made of high strength aluminum alloy, assuring a tensile strength in excess of 40,000 lbs. p.s.i. The jaws are 1" wide x 3" to the adjusting screws. The adjusting screws, made of special steel rod, are imbedded permanently in the lower jaw, the upper jaw is free to be set for adjustments in the clamping of objects up to 4½" thick. These new clamps weigh less than 1½ lb. each.

We are told by the supplier, C. B. Teeter, 4470 Oakenwald Ave., Chicago

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With VELEPEC Carbide-Tipped Router Bits, Grooving Saws, Shaper Knives, Four Wing Shaper Cutters, etc. for every conceivable shape. Stay sharp 10 to 30 times longer than regular steel tools. They stay sharper, cut cleaner and faster with smoother finishes. Effect tremendous savings in machine "reset" time and sanding operations.

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LET DAY DUST CONTROL PROVIDE THE ANSWER

A **DAY** dust control system engineered for your plant will answer all your dust problems . . . will stop dust losses and speed up production. Many woodworking plants discovered that **DAY** dust control reduced plant maintenance time . . . kept machine production time high, and improved working conditions, which increased plant output. Fire hazards were reduced and the neighborhood dust nuisance eliminated. In selecting **DAY**, these plants benefited from 70 years experience of the **DAY** Company in engineering, manufacturing, installing of dust control systems in woodworking plants.

WRITE FOR BULLETIN #491

The DAY Company

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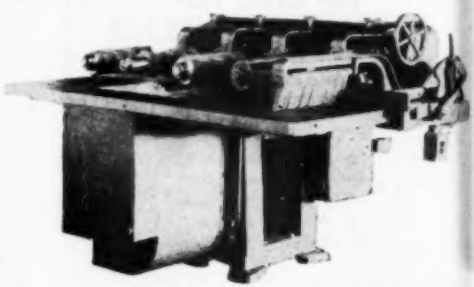
Branch Plants in Fort Worth, Buffalo and Welland, Ont.

A Real Husky

No. 213 A MODERNIZED HOOSIER SELF FEED RIP SAW



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DESIGNED FOR THE TOUGHEST RIPPING JOBS

FOR QUICK OPERATION — DEPENDABLE PERFORMANCE

This sturdy unit is designed specifically for high speed ripping of stock longer than 24" and as a gang ripper for stock as short as 12". The No. 213 is equipped with a stationary table top having all feed works brackets bolted to the top—as is the gear reduction drive. The mandrel rides on ball bearings and is raised and lowered quickly by a hydraulic cylinder. Eight driven rolls feed the stock through the saw at high speed. A 50 H.P. motor drives this unit at full capacity. The No. 213 is a real workhorse, built to handle your toughest jobs. Available for direct motor or V belt drive.

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- Auotmatic controls
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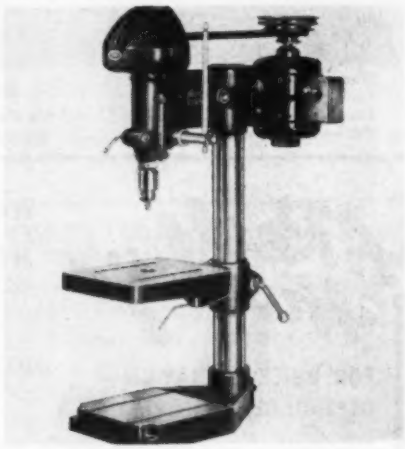
WARREN BROS. — ROADS CO.
32 Potter St., Cambridge, Mass.
W. A. LONG CO., Vancouver, B. C.
2 First Avenue East

15, Ill., that these clamps grip the work like a vise and without side slipping. The clamps are finding a variety of uses within industry.

DRILL PRESS

A new development in drive-belt alignment devices is but one of several features of the sturdy 1650 series drill presses just being marketed by Boice-Crane Company, 929 Central Ave., Toledo, Ohio. These presses are said to be the only ones offering a two-way drive aligner-belt tensioner. Perfect drive-belt alignment is assured at all times and, without wrenches or tools, belt tension is instantly released for quick, easy speed changing.



Every splined-drive part, including the pulley drive sleeve, is made of steel to effect quiet running and longer life. A new type guard fully covers the pulley spindle which is guaranteed true running by four grease-sealed ball bearings.

Other new features include a massively designed head and positive, easy operating, quick acting non-marring quill and column locks.

An extra wide selection of speeds is available in two ranges, 500, 925, 1750, 3250 and 5500 in the high and 425, 775, 1330, 2200 and 3340 in the low.

KNIFE GRINDERS

The new Rogers "NT Junior" combines speed and low cost for precision grinding of woodworking, paper cutting and other straight knives. It is intended for light-duty work and incorporates many of the advanced Rogers grinding features to give efficiency and economy.

One of the outstanding features is the separate reversing motor which drives the sturdy reciprocating knife table assembly.

Another is the combination of carefully machined angular "V" and flat ways over which the table travels. These broad ways transmit all grinding pressures to the base of the machine where they are easily absorbed. Since the table action is reciprocating the ways and bearings are always worn smoothly from end to end thus assuring long operating life.

A swivelling type knife bar on heavy trunions is fitted to the table. An index is included to allow for easy setup for bevel grinding to any desired angle. The "NT Junior" is designed for a 10" diameter cup grinding wheel to be driven by a separate ball bearing motor. A motor driven centrifugal pump forces an abundant amount of cooling liquid to the work for adequate quenching of the knife edge.

The "NT Junior" is being produced in four sizes . . . 32", 38", 48" and 60"

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INDUSTRIAL FLOOR TRUCKS
for Every Materials Handling Purpose

No. 327 — Hardwood body and stakes, steel tie rods in frame, welded steel sockets.

No. 423—Tilt top style. Hardwood deck, "all-welded" steel frame. Lattice end racks.

No. 749—"All-welded" steel Jig Skid. Can be tailored to your specifications. Upright posts used as gauge.

Semi-live Skid moves, stores, delivers product WITHOUT RELOADING. Assures Continuous Production, Activated Storage, Accelerated Shipment.

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BARS AND SPROCKETS
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Main Office and Factory
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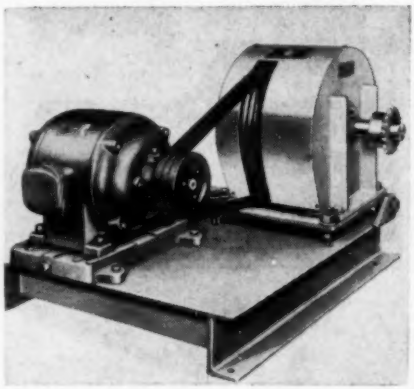
95 SPARK ST. BROCKTON 64, MASS.

. . . and the stroke is adjustable to any length within these limits.

For further information contact Samuel C. Rogers & Co., 193-210 Dutton Ave., Buffalo 11, N. Y.

CLIPPER DRIVE

Merritt-Solem Corporation, Lockport, N. Y., announces the development of a new clipper drive that has proved highly satisfactory and is rapidly gaining wide acceptance.



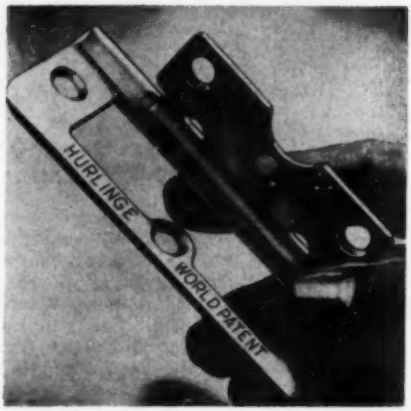
It is a compact unit and transmits power by means of an electric clutch and brake. The interesting feature lies in the absence of brake bands as heavy duty armatures and magnets are engaged in the proper sequence to operate the clipper knife. Being electric, it is possible to have any type control desired including full automatic measuring devices.

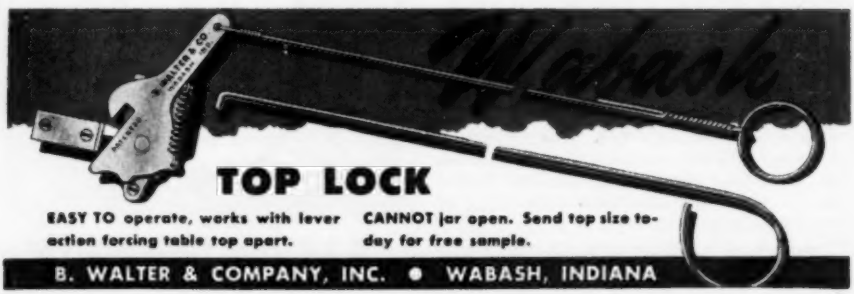
It is claimed that the drive can be applied to any make or model clipper where the knife action is generated through a crank shaft. The sprocket ratio between the drive and the clipper controls the number of strokes per minute of the knife bar. This can be made to provide either slow or fast operation.

It is called the CCB-50 Drive Unit and in addition to clipper operation has numerous other applications.

NON-MORTISE HINGE

A new non-mortising type hinge, a major change in hinge design, is now being distributed exclusively by the No-Mortise Hinge Corporation of Bound Brook, N.J.

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TOP LOCK
EASY TO operate, works with lever action forcing table top apart.
CANNOT jar open. Send top size today for free sample.
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The distinguishing feature of the hinge is that no recess is ever required to accommodate it. The hinge screws to the door and frame, eliminating all mortising and chiseling. It is applied very easily, with the outer and larger leaf of the hinge screwed to the frame, while the smaller, inner leaf is screwed to the door. When the door is closed the smaller leaf of the hinge fits into the larger one. The hinge is self-aligning and self gapping.

This new hinge design is available in standard sizes of 2, 3 and 4 inches, in standard finishes with loose or tight pin. According to Herman Farhy, president of the corporation, some territories are still open and jobber inquiries are invited.

WOOD CEMENT

A synthetic adhesive that is said to eliminate the use of clamps or presses in the cementing of laminated plastics and other building materials has been developed for industrial use by Adhesive Products Corp., 1660 Boone Avenue, New York 60.

The new cement, marketed under the trade-name "Stix," is both waterproof and quick-drying.

Stix is resistant to excessive heat and cold as well as most oils, acids, alkalis and water. It is flexible, yet shockproof. Even under long periods of dampness, its bonding characteristics are not lost. As Stix "cures" after application, it becomes stronger with age.

CLAMPS AND CLAMPING DEVICES

Wetzler Clamp Company, 43-15 11th Street, Long Island City, N. Y., has issued a green and black folder showing its line of clamps and clamping devices for woodwork and ironwork. Bar, hand, T-slot speed, carriage, mechanical dress, cross, pipe and quick action clamps are shown with accompanying specifications and prices.

Nutting's 61st Year

Fig. A

A NUTTING VETERAN

A husky, long lived truck at a low price. Semi-steel running gear — 13½" diam. main wheels that roll easily—6½" casters that really swivel. Northern hardwood, rigid frame, platform 15" above floor. Platform sizes 27 x 48, 27 x 54, 30 x 60.

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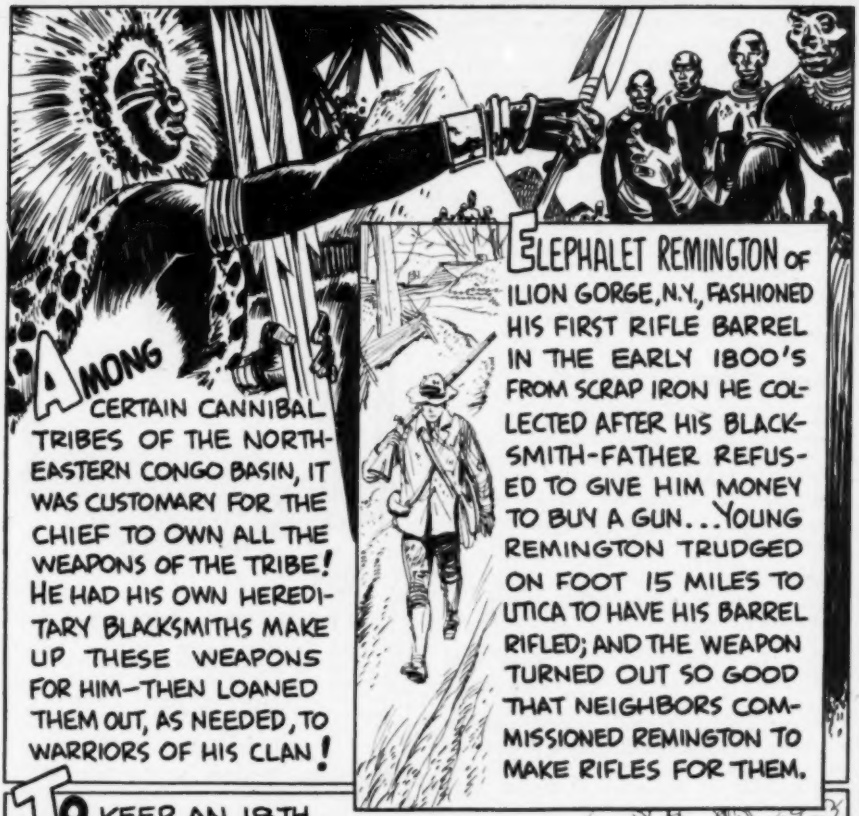
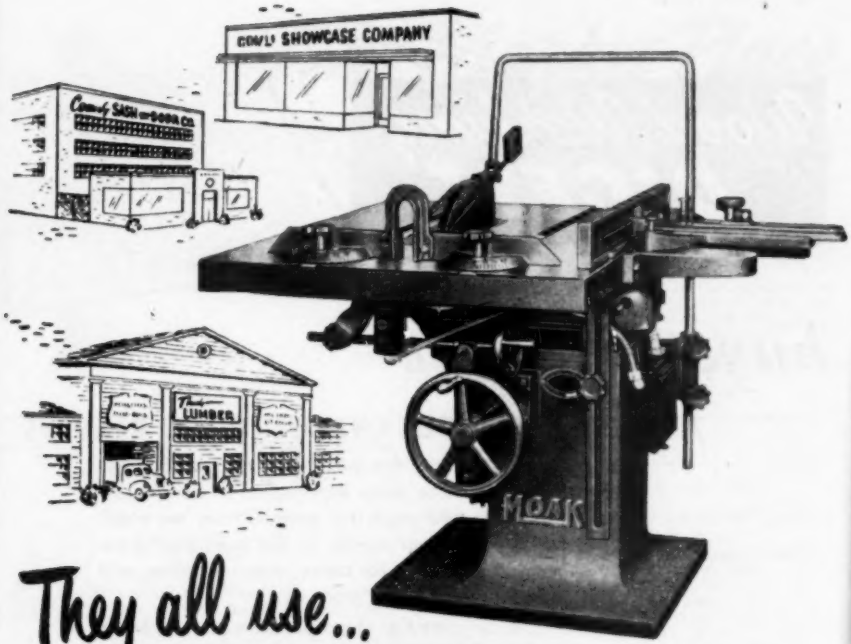
Mechanics Through the Ages



AMONG CERTAIN CANNIBAL TRIBES OF THE NORTH-EASTERN CONGO BASIN, IT WAS CUSTOMARY FOR THE CHIEF TO OWN ALL THE WEAPONS OF THE TRIBE! HE HAD HIS OWN HEREDITARY BLACKSMITHS MAKE UP THESE WEAPONS FOR HIM—THEN LOANED THEM OUT, AS NEEDED, TO WARRIORS OF HIS CLAN!

ELEPHALET REMINGTON OF ILION GORGE, N.Y., FASHIONED HIS FIRST RIFLE BARREL IN THE EARLY 1800's FROM SCRAP IRON HE COLLECTED AFTER HIS BLACKSMITH-FATHER REFUSED TO GIVE HIM MONEY TO BUY A GUN... YOUNG REMINGTON TRUDGED ON FOOT 15 MILES TO UTICA TO HAVE HIS BARREL RIFLED; AND THE WEAPON TURNED OUT SO GOOD THAT NEIGHBORS COMMISSIONED REMINGTON TO MAKE RIFLES FOR THEM.

TO KEEP AN 18TH CENTURY WATT STEAM ENGINE OPERATING IT WAS SOMETIMES NECESSARY FOR THE MANUFACTURER TO SEND ALONG A TRAINED MACHINIST WHO LITERALLY **LIVED** BESIDE THE CONTRAPTION LOOSENING ONE VALVE HERE, TIGHTENING ANOTHER THERE, INSTALLING NEW PARTS OR REPAIRING OTHERS, PACKING A PISTON AT REGULAR INTERVALS . . . THIS SERVICE WAS RENDERED UNTIL THE ENGINE WAS BROKEN IN TO IT'S WORK.



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TO CUT BOTH HEAVY MILL JOBS AND FINE SHOP WORK WITH UNERRING PRECISION

Capacity for cutting stock up to 5⅝" thick and accuracy for fine work are both available in this one machine—the Moak No. 16-A All Purpose Saw Table. Functionally designed throughout for efficient operation, Moak Tables raise, lower, or tilt at a turn of a hand wheel. Accurately graduated cut-off gauges adjust in V-slots machined in the polished semi-steel table; rip fence has rack and pinion adjustment. Choose from two models, three drives.

Get the facts on Moak Saw Tables right away. Write for our colorful booklet.

MOAK MACHINE & TOOL CO.
MOAK
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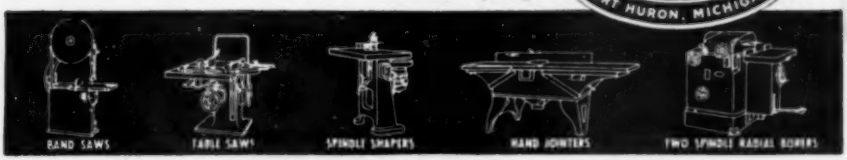

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If you will list below the wood-working machines, supplies or machine shop equipment in which you are interested and mail this page to us, we shall be glad to refer your needs to the manufacturers or others in position to serve you. Replies will come from them — not from us.

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Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

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Moulders, sanders, self-feed rip saws, band rips, routers, glue jointers, saw tables, planers, and many other items of new and used machinery.

Send us your inquiry.

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Woodward Machinery Co.

309 E. Second St. Cincinnati 2, Ohio

Band saw, Wright, 30 in., heavy, $175
Borer, Andrews 60 in. 5 spindle Horizontal, $350
Jointer, Egan 8 in. rd. head, light, $100.
Jointer, Crescent 24 inch, $150.
Molder, American 8 in. 4 side, good, $500
Molder, Smith 6 inch 4 side heavy M.D., $650.
Mortiser, Greenlee Horizontal, HC, $125.
Mortiser, New Britain No. 7 chain saw, $400.
Mortiser, Parks light vertical HC, $75.
Radial saw, Multiplex 1½ HP, 3 phase, $200.
Sander, Smith 42 in. 3 drum endless bed, MD, $1500
Saw, Cary, dbl. arbor, BB, MD, $250
Saw; F&E No. 291, dbl. auto., $600.
Saw, Hamilton 20 inch heavy duty, Variety, $175.
Saw, DeWalt Radial 3 HP, $250.
Sticker, Smith, 5 in. 3 side, $250

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Moulder, 6" Vonnegut 4-head, with hopper
Woodworker, Sidney Universal, five machines

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Band Saw: Crescent 36" bb vee-belt drive & motor
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Borers, McKnight No. 88 dmd.
Borer: Newton 2 spdle. horiz. dmd.
Borer: W&M No. 283B Sgl. Spdle. Vert. dmd.
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Clamp, Lancaster Bed panel air clamp
Clamp, Taylor, 40 sec. 4 clamps, 7 ft.
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Clippers, Sheridan 65" dmd.
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Frequency changers, 15 KW and 25 KW dmd.
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Jointer, Amer. 12" bb. dmd.
Jointers, New Moak 12", bb. dmd.
Lathe, Yates No. 74 bb. dmd.
Mortiser, Sidney, single spindle pb. bd.
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Mortiser, W&M No. 288—5 spdle. Horiz. dmd.
Mortiser: W&M No. 284 Sgl. Vert. bb. dmd.
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Routers, Onsrud W240, bb. dmd.
Router, Yates-Amer. U9 bb. dmd., High Speed
Sander, Berlin, 31" 3 drum, roll feed bd.
Sander, Mattison No. 134, pb. bd.
Sander, New Jefferson, hand block, bb. dmd.
Sander, Smith 49" 3-drum endless bed
Sander, B & M 14 flat sander & motor
Sander, 48" double disc, dmd.
Sander, W&M No. 171 Hand Block, pb. bd. & Mtr.
Sander, Yates 213, 49" 2 drum endless bed, dmd.
Sander, Yates, No. 427 Hand Block pb. bd. & Motor
Sanders, F & E 60" 3 drum roll feed, dmd.
Sanders, McKnight sgl. drum 24"x16" dmd.
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Sander: Oakley H2, edge belt. bb. dmd.
Sander: Porter cable vert. osc. dmd. Sgl. Spdle.
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Sander: W&M No. 315 edge belt, dmd.
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Saw: Wallace Variety, bb. dmd.
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Saws, New Delta-Crescent 12" tilt. arbor. dmd.
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Saws, Buss Tilt table Variety bb. dmd.
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Tenoner, Hayes 6 ft. dbl. with copes, pb. bd. & mtr.
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Woodworker, Crescent, pb. bd.

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5 hp Belt Motor
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HEAVY DUTY GREENLEE 24" BALL BEARING JOINTER. Practically new. Well suited to work in connection with self feeding attachment.
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More than 150 machines to select from.

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Band or circular saw mill.
Timber sizer—any size.
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Will pay top price for any modern machinery
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WALNUT BOOKLET

A new guide and set of standard specifications for the selection of walnut veneers has been distributed to architects, decorators, furniture manufacturers, and others who specify cabinetwoods for furniture or architectural woodwork.

The booklet from the American Walnut Manufacturers Association, 666 N. Lake Shore Drive, shows all principal figure types of American walnut now available in quantity—some in hundreds of thousands, other types in millions of feet. Each of the numerous plates has a number, to be used in specifying that figure type. Thus the designer can order from the plywood supplier and he, in turn, can order from the veneer firm, without possibility of error.

Photographs illustrate the variety of figures obtainable by the same method of cutting and by various methods of cutting. For example, four half-round panels are shown side by side, the first plain, the second wild grain, and the next contrasty and dappled, and the fourth simply dappled. Because American walnut has so many figure types, 40 plates are required to demonstrate the types now to be had in quantity. No attempt is made in the booklet to show the unusual, freak figures frequently found in American walnut, since these can be had only in limited amounts. Nor are the many intriguing matching effects shown, for other association booklets do that job.

Many of the veneer figure types are shown in a variety of popular finishes. For example, stumpwood, a decorative and well-liked figure type found in no other species, is pictured in a series of panels—first in its unfinished state; then stained, filled, and with an "Early American" finish; then open pore, lacquer finish; and last, stained, filled, piano-type finish. This technique vividly proves that American walnut is a versatile wood which fits well into a wide range of color and style plans.

MOTOR BOOKLET

Design and application features of Life-Line motors (now made in ratings up to 700 horsepower) are described in a new 20-page booklet available from Westinghouse Electric Corporation.

Life-Line motor applications in the lumber, paper, chemical, central station, and metal-working industries are illustrated and separate sections describe the special construction of motor frames, end brackets, stators, rotors, and bearings. Standard and special mountings and enclosures also are described.

For a copy of this booklet, B-4731, write Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pennsylvania.

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Handy revolving carrier
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New Handy Nos. 54 & 55 chair clamps
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Porter 30" with 4-post feeder
Dennis veneer jointer
Hand jointers, 12 to 24"
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Jenkins saw type veneer, B.B., 6 & 8'

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No. 55-C Mattison ball-bearing, motor-drive automatic turning
No. 57-D Mattison 40" lathe

MOULDERS
XL 2x4-in. ball-bearing
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Fay & Egan 7" plain bearing, 4-head
Woods 8" plain bearing, belt-drive
Yates C-4 plain bearing

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No. 500 Newman six-rol
No. 75 Yates-American double
No. 177 Yates 30-in. roughing, double
Buss 30, 36 & 44" single; 30" double
Whitney 30" single
Whitney 36" double
Oliver 30-in. ball-bearing, single
No. 208 Buss 20-in. single

ROUTERS
No. 500 Porter

SANDERS
No. 10 Nash, 6-spdle.; No. 25, 10-spdle.
No. 171 Wysong & Miles moulding
Yates 3-drum endless-bed 43 and 30" coupled motor
Smith ball-bearing, motor-driven, 3-drum
No. 143 Mattison three-drum

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No. 202 Mattison chain-feed rip
No. 207 Mattison chain-feed rip
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Wilkin-Challoner double cut-off
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Moak 36-in. band saw
Greenlee gang rip

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Buss and Whitney double-spindle
Whitney automatic
Oliver single-spindle

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No. 96 Jenkins ball-bearing, belt-drive
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No. 928 Covel-Hanchett automatic circular saw sharpener
No. 300 Francis flat plate edge gluer (new)
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West Side 36-in. V-belt, M.D.
American 42" V-belt, motor drive.
Tannewitz 42" M.D.
Buss 36 in. bab-brg., V-belt, motor-drive.

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Yates No. 312 44" chain-feed hand rip.
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Mershon 42" Twin Band Rip B.B.

BORING MACHINES
New Wysong and Miles sgl-spdl. vert., d-m-d.
Greenlee 363-6 spindle, Univ. Vertical M.D.
Root "B-M" 16-spindle, cluster hd. motor dr.
Greenlee 356-P Single Ver. power feed.
Andrew single-spindle vertical, motor-drive
Rogers single-spindle horizontal borer.

BLOWERS AND FANS
American No. 80E with 40 h.p. coupled motor.
Clarage type IE Model 11 Ball Bearing.

CLAMPS—GLUE ROOM EQUIPMENT
Greenlee No. 599 frame and furniture clamp.
Black Bros. 30-section, 10-ft., power-feed, ten Style E clamps per section, jaws 7-in. high, opening 24-in.
Taylor 6-ft. 12-sec. wheel type clamp carrier.
Francis 4'x8' Hand screw Veneer Press, 20 scr.

FILING ROOM MACHINERY
Rogers 38" cup wheel auto. knife grinder.
Hanchett No. 608 lap gr. b.b. max. cap. 8" wide
Covel-Hanchett No. 325 thin knife grinder.
Black Diamond No. 5 circular saw filer, m.-d.

JOINTERS
American 8-in. "Clement" long tables.
Yates No. 213 Continuous feed direct m.d.
Jenkins No. 23, veneer jointer, ball-bearing.
Porter, American, Oliver, Sidney, Fay & Egan, from 8" to 30" wide—several have feeding attachments—tell us what you need.
Yates No. 199, 20-in. rd.-hd., V-belt, m-d.

LATHES
Whitney 50-in. backknife, gage, lathe.
Yates-American T5 Auto. Shaping, M.D.
Mattison No. 214 copying lathe.
Oliver 12"x6' bed speed lathe, d-c mtr. in head
Imperial automatic shaping lathe, h-b., m-d.

MORTISERS
Greenlee No. 228 vertical automatic H.S., m-d.
New Britain No. 2 Chain, with motor
Northfield hydraulic chain, motor-dr.
Greenlee No. 227 hollow-chisel, belt-drive.
F.&E. No. 144 horizontal, power-feed.

MOULDERS
Yates No. C3 4" fast feed, belt drive.
Yates No. 108 10" belt drive coupled motor
Newman 4"x4" all Electric.
Woods 132M 6" Electric
Smith 6-in. belt drive with motor.
Vonnegut 8-in. electric moulder and frequency changer
Yates C-88, 8-in. x 4-in. all electric

NAILING MACHINES
Auto Nailer "Blue Model" M.D.

PLANERS
Yates Amer. J 18, 18" single B.B. D.M.D.
Yates No. 156 20" dr. hd. m.d.
F & E No. 156 24-in. single, dir. m.d.
Buss 6A 36" 6-roll single dir. m.d.
Berlin No. 177, 30x12" double belt dr.
American No. 80, 15-in. double, heavy duty.
Yates B-2, 36-in. double, motor-drive.

ROUTERS
Carter Type TR, motor-drive 15,000 r.p.m.
Ekstrom-Carlson No. 126, ball brg., motor-drive

SHAPERS
Porter No. 103 single, ball-bearing, motor-drive
Whitney No. 134 double-spindle dir. M.D.
Amer. No. 20 dbl-spdl. dir. M.D. Freq. Chgr.
Whitney No. 165, s.s., motor on arbor.
Onsrud W-248 single, ball bearing, m.d.
Whitney No. 282 Sgl. D.M.D. 56"x40" table
Onsrud W 125 Automatic 84" Cap.

SANDERS
Yates No. 421, 40-in. 6 drum with motors.
Yates 401-49" roll feed, M.D.
Solem No. 370 43" 2 drum End. Bed.
Fay & Egan 30", 3-drum, roll-feed
Mattison No. 124, 6-ft. auto. stroke, m.d.
Buss 2-spindle vertical, oscillating belt drive.
Wysong & Miles No. 164 universal belt, m.d.
Yates No. 431, 43-in. 3-drum end-bed, m-d.
Porter-Cable 15-in. disc. motor drive

MITRE SAWS
Delta 10-in. tilt-arbor with motor.
Union Tilting Arbor direct M.D.
American 12-in. tilting-arbor, motor-drive.
Wallace 8" tilt-arbor, 1-h.p. 1-ph. motor.
American Dbl. revolving Arbor 5 HP Belted mtr.
Whitney No. 77 tilting arbor, direct m.d.
Dodds tilting-table, V-belt, motor-drive

CUT-OFF SAWS
De Walt Radial Arm, 5 HP motor.
Jenkins No. 97, 103x48" double-end, chain-feed with copes, direct motor-drive
Greenlee No. 451 auto. cut-off and dado.
Buss double cabinet type, motor drive.
Porter 43-20S 36-in. stroke, motor on arbor.
Fay & Egan No. 307 butting saw.

RIP SAWS
Yates G-2 chain feed, B-B. mtr. dr.

TENONERS
Fay & Egan 505 electric with copes
Greenlee No. 534, tilting spindles, dir. m-d.
American single-end with copes, rolling table.
Jenkins No. 95 double end, jump dado, d.m.d.

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Superior 36" Ballbearing, Motor Driven
Superior 42", ballbearing, Motor Driven
American No. 8-38, 38", Ballbearing, M.D.

BORERS
Andrews 60" 16-spindle, vert. M.D. Power Feed
Andrews 60" 6-Spindle, Horiz., DMD Power Feed
Valley City, 2-spdl., adj. radial, Motor Driven
American 2-spdl., adj., radial, Motor Driven
Greenlee No. 369 Multi-Spindle, Vertical Motor Driven, Power Feed
Superior 2 Spindle Adjustable Radial, BB, D.M.D.
Superior 3-Spindle, Adjust. Horiz. Motor Driven

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Bell 4-way Hi-Jaw, Air Operated
Bell 4-way Frame & Chair Back, Air Operated.
Bell No. 95 Revolving Case Clamp, Air Operated.

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Taylor 20-section, 7½" wide, 4-32" clamps per sec.
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American 24" Ballbearing, Round Head, Motor Driven, with Billstrom Feeder

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H & A 6" Round Head, B.B. Motor Driven
Fay & Egan No. 217, Continuous Chain Feed
American 12", Round Head, Motor Driven

JIG SAWS
Oliver No. 173 Self-contained, D.M.D.

MORTISERS
Greenlee No. 228 Vert., Hollow Chisel, M.D.

MOULDERS
American No. 1, 4", 4-Side, Motor Driven
American No. 1, 6", 4-Side, Motor Driven
Eaglesfield 4", 4-side all electric, B.B.
Mattison No. 262, 6", 4-Side All Electric B.B.

ROUTERS
Porter No. 502, 2-spdl., B.B., D.M.D.

PLANERS
Buss No. 4, 30" Single Cabinet, D.M.D., B.B.
Superior 28" Single, Motor Driven
American No. 112, 30" single, Motor Driven
Yates No. 156, 26" Single Cabinet, Motor Driven
Superior 24" Single, Motor Driven
Whitney No. 32, 30" spl. Cabinet, D.M.D., B.B.
American No. 666, 30" Dbl. Cab., D.M.D., B.B.

SANDERS
Smith 43", 3-drum Endless Bed D.M.D.
American No. 2, 42", 3-drum, Roll Feed, M.D.
American No. 2, 24" Disc and Oscillating Spdl.
American No. 5 Drum Sander, D.M.D.
Mattison No. 138 Hand Block Belt, Motor Driven
Mattison No. 172, Oscillating Edge Belt, M.D.
Pryibil 20" Horizontal Belt, Motor Driven
Porter-Cable 10" Vertical Belt, D.M.D., B.B.
Delta 6" Adjustable Belt, B.B., M.D.
Nash No. 10, 48", 6 Spindle, Auto. Turning Sander, Motor Driven

SAWS—CUT-OFF
Diehl No. 725 Hydraulic, Automatic Cut-off Saw, Direct Motor Driven, Ballbearing
Bell No. 12-B Dbl. Mitre and Cut-Off, BB, DMD
Buss Double End, Motor Driven
Racine Floor Type—Motor Driven
Fay & Egan Double End, Motor Driven
Oliver No. 136 Ceiling Type Swing, Ballbearing, Direct Motor Driven with Tables

SAWS—RIP
American No. 13 Chain Feed, Motor Driven
Mattison No. 207M Chain Feed, DMD, B.B.
Eaglesfield Chain Feed, D.M.D., B.B.
Yates G-2, Chain Feed, Ballbearing, D.M.D.

SAWS—VARIETY
Tannewitz Type "U" Tilting Arbor, Direct Motor Driven, Ballbearing, (new)
American No. 1, Tilting Table, Motor Driven
Dodds Tilting Table, Motor Driven
Pettingell, Tilt Arbor, Roller Table, M.D.

SHAPERS
Whitney No. 393 Automatic, Single Spindle, BB, DMD, with Frequency Changer
Onsrud W125 72" Automatic, multiple stations, B.B., Direct Motor Driven, with freq. changer
Buss, Sgl. Spdl., Hi-Speed D.M.D., B.B.
Oliver Sgl. Spdl., Hi-Speed D.M.D. B.B.

SPREADERS—GLUE
Francis Model G, 52" Double Roll, for cold glues, Motor Driven
Advance 24", Double Roll, equipped for steam
Bell No. 13, Auto. Dovetailer Gluer, electric heat

TENONERS
American No. 2½ Single End Tenon Heads, M.D.
McKnight No. 71C Chair Back Tenoner, M.D.
Towsley Single End, Tenon heads, lower cope, cut off saw, Motor Driven

VENEER MACHINERY
Dennis Continuous Feed Veneer Jointer, M.D.
Dennis Veneer Taping Machine, Motor Driven
Jenkins-Falls Veneer Jointer, B.B., Motor Driven
Merritt 84"x54", 3 Plate Veneer Redrier, D.M.D.

MISCELLANEOUS
Mattison No. 231 Univ. Cutterhead Gr., D.M.D.
Auto-nailer, Floor Type, Direct Mtr. Driven, B.B.
Yates-American T-5, 30" Auto. Turning Lathe, Direct Motor Driven, Ballbearing
Worthington 6½"x6" Air compressor, Motor Driven

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Northfield, 20" M.D. new
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Root 2 spl. Hor. late type
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Greenlee Post Borer
Moak 2 spindle Horizontal Radial Dowel

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Tide Box Makers Rip Saw M.D.

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Rowley & Hermance Door Clamp 3½ x 8 ft.
Lancaster Pneumatic Chair Clamp
Black Bros. Chain Clamps
3000 Spring Clamps No. 2 and No. 3
Greenlee No. 602 Q. A. Sash Clamp
Handy No. 100 End Clamp 78" cap.

DADO SAWS: Fay & Egan No. 5 C.O. and Dado
American No. 1 Dado Saw Auto.
Hall & Brown No. 134 Comb. C.O. Dado Saw Pwr. Fd.

CUT OFF SAWS:
Greenlee No. 453 Auto. Railway C.O. 7" cap.
Comet Timber C.O. 10 h.p. 44" blade
Swing Cut Off Saws (several)
Fay & Egan Table C.O. Saw

DOWEL MACHINES: Fay & Egan No 406 Rod Mach.

JIG SAWS: Oliver No. 173-B Ball Br. Self Contained Motor built in. New at Bargain Price
Beach No. 1 Tilting Table Scroll Saw
Jones Superior M.D. Self Contained

JOINTERS: Crescent 12" B.B. 4 Knife
16" Fay & Egan No. 316 B.B. M.D.
Smith 16" 4 knife Jointer
Fay & Egan 20" rd. hd. Jointer
Fay & Egan No. 316 20" Rd. Hd. M.D.
Northfield (Late) 12" B.B. Motor on Hd.
Fay & Egan 24" No. 115 Belt or Motor Dr.
Moak 12" B.B. Jointer M.D., New

LATHE: Oliver 12"x5 ft. Sgl. Ph. Motor Headstock Goodspeed type AV-4 Automatic
Wood Lathe Sets 12" to 24" swing
Goodspeed Variety Hand Feed
American No. 7, 32" Patternmakers

MORTISERS:
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New Britain No. 7 Chain, Compound Table M.D.
Wysong & Miles No. 134 H. C. Auto. Feed
American No 20 H. C. Comp. Table M.D.
American H C. Horizontal Auto. Feed
Crescent Hollow Chisel Mortiser

MOULDERS:
American No. 3 Heavy 6" 4 side
Fay & Egan No. 207 7" 4 side
Hermance No. 50 8" 4 side Bab.
Hermance 10" 4 side
Hermance 6" 4 s. 10 hp.
Fay & Egan No. 184 12" 4 side
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Grammes 4 track Cigar Box Nailer
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Fay & Egan No. 2 24"x6"
American No. 1 20"x6"
Powermatic 12"x4" M.D.
Sidney 18"x8"
Solem 12" D.M.D.
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L. Power & Co. No. 1 24"x6" 4 side Ball Bearing P. & M. w. all Belting. Used only 3 months.

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NEW MULTIPLEX RADIAL SAWS IN STOCK:
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Comet Cub ½ hp., 1 ph.
DeWalt 5 hp., 3 ph. G.E. type rebuilt
Walker Turner 3 hp., 3 ph.
No. 20-A ½ hp. single ph.
No. 30-A¾ hp. single ph.
No. 50-A 5 hp., 3 ph.

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Falls No. 103 St. Line B. B. 15 hp. motor
Falls No. 103 St. Line B. B. Belt Dr.
Mereen Johnson No. 441 Gang
Greenlee No. 429 Power Feed
Fay & Egan Heavy Hand Feed 10" cap.

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Cincinnati Elect. Stair Router
Hunter Elec. Stair Router $75.00
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Portable 1 hp. and 2 hp. New

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SAW TABLES:
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Crescent No. 2, 3, and 5 Universal

SANDERS:
American-Col. 42" 3 drive
American No. 15 24" single dr. Hand Feed
American No. 15 30" single dr. Hand Feed
Mattison No. 115 Variety Belt Sander
Porter Cable Oval. Spindle, M.D.
Porter 15" Disc M.D.
Wysong & Miles No. 171 Belt Sander
Yates American Comb. 15" disc & Drum M.D.
Yates No. 401 42" 3 Dr. Roll Feed

SHAPERS:
American No. 1 Sgl. Ball Br. M.D.
Delta Floor type M.D.
Crescent Single Ball Bearing M. D.
Crescent S-2 B.B. M.D.
Fay & Egan No. 265 Dbl.
Fay & Egan No. 552 Single Ball Bearing M.D.
Double Spdl., B.B. Mtrs. on spdl., 3000 or 7200 rpm
Porter No. 105 B.B. M.D. (late)

TENONERS:
American No. 1 Copes and C. O. Saw
Crescent T-3 Electric Tenoner
Fay & Egan No. 2 2 copes
Powermatic B. B. Tenoner
Smith Sgl. Heavy Copes & C. O. Saw

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VENEER CLAMPS: 5—38" 3 screws
4—29" 2 screws

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Jones Superior radial, 1" to 16"
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Single spindle horizontal

DOVETAILERS

Dodds 10, 15, 20 spindle

DOWEL MACHINES

Hawker No. 2 All Ball bearing & roller bearing VBD
Hawker No. 2 Ball Bearing Head VBD

JOINTERS

American 12" Wedge Bed BB
American 16" Wedge Bed BB
12" Colloday L. Powers, HB Smith, Crescent Sidney
Northfield 12" DMD Heavy Duty

LATHES

Mattison 55C BB Live Tailstock

MORTISERS

Northfield chisel mortiser, motor driven
Wallace chisel mortiser, motor driven

MOULDERS

Mattison No. 224 9" all electric, hopper fd.
Mattison No. 262 6" Drop Bed DMD
Eaglesfield 6" DMD BB All Electric
Yates C55 9" DMD All Electric
Yates American C55 9" DMD All Electric
SA Woods No. 107 12" 5 heads, belt driven
S.A. Woods 701 all electric DMD12" x 4"
SA Woods No. 131 9", belt driven
American C4A 8"x4" B.D.

PLANERS

American Saw Mill Pony 24" 5 HP CMD
Buss 30"x8 No. 4ML DMD Motor, sectional feed roll, sectional chip breaker Knife Grinder
Buss No. 4 BB 30" single Sec Feed & Chip CMD knife Grinder
Northfield 24" single, MD motor fd. No. 5
Whitney No. 32 36" BB CMD Knife Grinder

PLANER & MATCHER

Fay & Egan No. 156 20"x8" 6 hds., belt dr.

SANDERS

Peerless 9" 14" and 20" horizontal
Peerless 9" 14" Vertical
Wysong & Miles, Oakley, Mattison belt
HB Smith 42" 3 drum, endless bed
Yates 42" 3 drum Belt drive

SAWS - CUT OFF

Porter C43 5 HP DMD BB
Beach 5 HP DMD BB
DeWalt BB DMD 10 HP with water pump and 2 vises Metal Cutting Model ME-2
Heston & Anderson No. 5, No. 25 & No. 55
Multiplex 5 HP DMD BB
Unipoint 3 HP DMD BB
Wallace 2 HP DMD BB
DeWalt 1 to 5 HP DMD BB

SAWS - BANDSAWS

American BB No. 4 40" rip and resaw
36" American, Tannewitz, Crescent, Oliver
27" Crescent Band Saw
32" Crescent guarded BB VBD
Northfield BB & DMD 20" to 36"
Oliver 30" DMD Fully Guarded

SAWS - RIP SAWS

Diehl BB No. 77 DMD 15 HP
Sinker Davis, self feed gang, BB belt dr.
Hermance Straight Line Plain Bear., BD

SAWS - VARIETY

American Saw Mill 5 HP DMD Tilt Arbor
American No. 10 tilt top belt drive
BM Root tilt top belt drive
Northfield Tilt Top DMD
Towsley DMD Tilt Arbor 5 HP
Fay & Egan DMD Tilt Arbor 5 HP
American Sawmill Tilt Arbor DMD 5 HP
50 other makes to choose from

ROUTERS

Ekstrom Carlson New No. 232
Ekstrom Carlson No. 126

SHAPERS

McCartney BB 1 spindle
L. Powers single BB - MD
Union Single spindle BB MMBD
Onsrud No. 200 Single 15,000 RPM
Whitney 2 sp. automatic BB MD No. 102
Whitney single 153 DMD and Belt Drive
Yates N2 BB MD
Yates N1 Double Spindle BB BD-2-7½ HP

TENONERS

Crescent single end, 5 head individual motor drive, BB
American No. 1 Single end belt driven
Newman single end BD
Greenlee Single 531 BB 5 heads

MISCELLANEOUS

Electric Carpenter 5 machine combination all ball bearing motor driven.
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Evans Ring Joint Machine
Union case clamp.
Covel Hanchett Band Re-saw grinder MD
Morgan Double Lock Corner No. 6, 12"x27"
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Smith & Phillips pulley pocket machine

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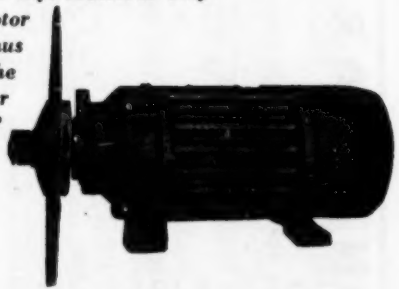

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Greenlee 4 ft. vertical gang borer
Root Vertical Power Feed Gang Borer
Multiple Spindle Vertical Fay & Egan Borer
Amer. No. 2½ Single Spin. Horiz. Boring Mach.

CLAMPS

Handy Revolving Case Clamp
Handy No. 103 Frame Clamp
Automatic Taylor Panel Flow Glue Spreader
29 Section 6½' Power Operated Billstrom Clamp Carrier
40 Section Taylor Power Operated Clamp Carrier

DOVETAILERS

10 Spindle Dodds Dovetailer
Dodds 12-Spindle Dovetailer
Wysong & Miles No. 290 Auto. Dovetailing Mach.
Wysong and Miles No. 500 and 600 Auto. Dovetailer

GLUE SPREADERS

Practically New Black Bros. 12" Motor Driven Edge Glue Spreader
New Union Conveyorized Edge Glue Spreader
Taylor Panel Flow Edge Glue Spreader
62" Black Dble. Rubber Roll Resin Glue Sprdr.
54" Union Dble. Rubber Roll Resin Glue Spreader

GRINDING ROOM EQUIPMENT

American No. 9 Automatic Knife Grinder

JOINTERS

Yates-American No. 213 Direct Motor Driven Glue Jointer
Yates-American 16" No. 1 Direct Motor Driven Ball Bearing Hand Jointer
Porter 6" Direct Motor Driven Ball Bearing Hand Jointer

LATHES

Mattison 42" No. 57-D motor drive ball bearing
Mattison 30" No. 55-C motor drive ball bearing
Yates-American 30" T-5 Lathe

MORTISERS

Wysong & Miles No. 288 direct motor driven 6-spindle mortiser
Wysong & Miles No. 286 Hinge Seat Mortiser
Greenlee No. 227 direct motor driven single spindle mortiser

MOULDERS

Vonnegut 4" electric Moulder
Yates-American 4" Type C-88 Electric Moulder
Newman 6" No. 46 Electric Moulder
Newman 12" No. 27 Ball Bear. Belt Dr. Moulder
Hayes Sash & Door Sticker w/Plowing & Boring
Practically new 12" Vonnegut Electric Moulder
Woods 6" No. 132M Electric Moulder
Hermance 8" No. 50 Ball Bearing Moulder

NAILING MACHINES

2 Doig 5 Track Closed Back Nailers
4 Doig 6 Track Closed Back Nailers

SINGLE PLANERS

Buss 30" Direct Motor Dr. Ball Bear. Sgl. Planer
Buss 36" Direct Motor Dr. Ball Bear. Sgl. Planer
New Crescent P-24 Direct Motor Dr. with Grinder
Greenlee 36" No. 110
Yates-American 24" No. 1 Direct Motor Driven Ball Bearing Facer with Four Post Herzog Feed

DOUBLE PLANERS

Yates-American 30" No. 177 Ball Bearing Direct Motor Driven with electric Knife Grinder

SANDERS

Yates-American 43" No. 431 Direct Motor Driven Endless Bed Sander
Mattison No. 124 Automatic Stroke Sander
Pearson Waterfall Sander
Oakley Semi-Automatic Stroke Sander
Oakley Model H drawer Sander
Nash No. 50 and No. 25 Turning Sander

BAND SAWS

American No. 4 Band Resaw
J. A. Fay & Co. 36" Band Saw

CUT-OFF SAWS

Wilkin-Challoner Chain Feed Double Cut-Off Saw and Panel Sizer
Yates-American No. 51 Direct Motor Driven Swing Saw
2 Beach Direct Motor Driven Ball Bear. Double Cut-Off Saws & Rip Saws for Sizing lge. Panels

RIP SAWS

Mattison No. 207 Direct Motor Driven Ball Bearing Glue Joint Rip Saw
American No. 15 Ball Bearing Chain Feed Rip Saw

MITRE SAWS

Bell No. 12 Direct Motor Driven Ball Bearing Double Miter Saw

SHAPERS

Whitney No. 251 Double Spindle Electric Shaper
Whitney No. 234 Double Spindle Electric Shaper
Whitney No. 393 Automatic Single Spindle Shaper
Onsrud W-125 Double Spindle Automatic Shaper
Onsrud W125 Single Spindle Automatic Shaper

TENONERS

Fay & Egan No. 505 Direct Motor Driven Ball Bearing Single End

VENEER MACHINERY

Francis 76" Hydraulic Veneer Clipper
Dennis Veneer Taping Machine, Motor Driven
100" Coe Veneer Clipper
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Buss Double Cut-Off Saw
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* Yates-American No. 213 Glue Jointer.
* Jenkins No. 343-A glue jointer
* Diehl No. 60 glue jointer.

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Mattison No. 210 copying lathe.

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Greenlee No. 228 Auto. Hollow Chisel Mortiser.
New Britain No's. 2 and 7 chain saw mortiser.
* Whitney No. 67 horiz. sec. bit mortiser.

MOULDERS

* Mattison No. 276—6-in. electric moulder.
* Vonnegut 6-in. electric moulder.
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* Yates-American No. 3—30" facing planer. Herzog feed

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* Yates-American G-44 straight line cut-off saw.
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* Yates-American G-77 straight line ripsaw.
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* Bell No. 11 power door clamp.
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* Whitney No. 61 tilting arbor variety saw.
* Fay & Egan No. 500 tilt-table variety saw.
* Tannewitz tilt-table variety saw, b.b.
* Baker Double Arbor Variety Saw, BB.
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* Porter No. 201 Double Spindle Shaper
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* Onsrud No. 124 automatic single spindle shaper.
* Whitney No. 202 automatic double spind'e shaper.

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* Greenlee No. 532 single end tenoner.
Greenlee No. 530 single end tenoner b.b.
* Wilkin-Challoner No. 70 - 96" double end tenoner.
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Mattison No. 244 Cut-off Saw, B.B., D.M.D.
Mattison No. 207 chain fd. Rip Saw, b.b., d.m.d.
Bell No. 12 Double Mitre Saw, B.B., M.D.
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Sidney 2-spindle B.B., motorized
Onsrud W-226 Buck Shaper, B.B., D.M.D.
TENONERS
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PRODUCTS INDEX

Compiled for quick reference and for your convenience, this handy index of products shows the pages on which you will find the items advertised in this issue. When writing to advertisers, it will be appreciated if you will mention WOOD WORKING DIGEST.

Abrasive Belts, 41, 133
Air Compressors, 10-11
Air Cylinders, 10-11

Band Saw Guages, 92
Band Saw Guides, 138
Band Saw Tires & Wheels, 70
Bending Equipment, 229
Bits, machinery, 60, 75, 84, 195
Boring Machines, 57
Box Machinery, 44

Canvas, graphite coated, 103
Cement, wood, 198
Clamp Carriers, Inside Back Cover
Clamping Machines, 96, Inside Back Cover
Clamps, 93, 186, 194
Cupboard Doors, 92, 134-135
Cutter Heads, 69, 73, 111, 182, 188
Cutters, 136

Dimension Stock, 126
Drill Presses, 157
Drilling Attachments, 186, 193
Drills, hand, 187
Dry Kilns, 32, 39, 114, 198
Dust Control Systems, 20, 92, 97, 123, 197

Factory Trucks, 93, 103, 132, 199, 201
Finishes, 104

Glue Spreaders, 184
Glues, animal, 87
Glues, casein, 12, 16, 102
Glues, resinous, 12, 14-15, 83, 109, 122, 155
Glues, vegetable, 12
Goggles, 170
Grinders, knife, 27, 139

Hardware, 59
High Frequency Bonding Equipment, 3, 8-9, 19, 44, 149
Hogs, 28, 91
Humidifiers, 46

Industrial Engineers, 103

Jointers, 1, 190, 203, 227

Knives, 24, 73, 111, 136, 177, 178, 181, 188, 192, 196

Lacquers, 104
Lathes, 34-35
Lumber, 25, 90, 148, 168, 232
Lumber Drying Service, 88

Matchers, 89
Moisture Meters, 58, 92, 124
Molders, 67, 86
Mortise Chains, 176, 199
Mortisers, 34-35

Nailing Machines, 6-7, 173
Nails, 231

Oil Cups, 101

Paint, 104
Planers, 18, 21, 29, 34-35, 74, 89, 120, 175
Plastic Sheets, 158-159
Plywood, 140, 147, 168
Plywood, molded, 150, 154
Pneumatic cylinders, 8-9
Presses, plywood, 142, 149, 160

Resaws, band, 76
Routers, 119, 121

Saddle Seat Machinery, 65
Safety Equipment, 170
Sanders, automatic stroke, Back Cover
Sanders, belt, 164-165
Sanders, contour, 72, 128
Sanders, drum, 4
Sanders, endless bed, 2
Sanders, portable electric, 17, 125, 137
Sanders, spindle, 164-165
Sash & Door Machinery, 116-117
Sash Pinner, Inside Front Cover
Saw Blades, band, 81, 93, 103, 113, 196
Saw Blades, carbide, 36, 115, 185
Saw Blades, circular, 98
Saw Setting Machines, 56, 132
Saw Sharpeners, 27, 180
Saw Tables, 203
Sawmills, 201
Saws, band, 71
Saws, cut-off, 30, 49, 50, 77, 118, 152
Saws, rip, 167, 197
Saws, tilting arbor, 22, 227
Saws, variety, 77, 118
Screw Drivers, 33
Screw Driving Machines, 31
Screws, 23, 33, 43, 82, 99, 231
Shaper Collars, 93
Shapers, 13
Stains, 104
Stapling Machines, Inside Front Cover
Steel Strapping, 26
Surfacers, 21, 34-35, 74

Table Equipment, 191, 200
Tack Rags, 128
Tackers, Inside Front Cover
Tenoners, 90

Valves, 8-9
Varnish, 104
Veneer Cutters, 163
Veneer Dryers, 151
Veneer Tables, 168
Veneers, 130, 148, 153, 156, 168, 169

Wood Fillers, 129
Wood Prefabricator, 94
Woodworking Tools, all types, 116-117, 193

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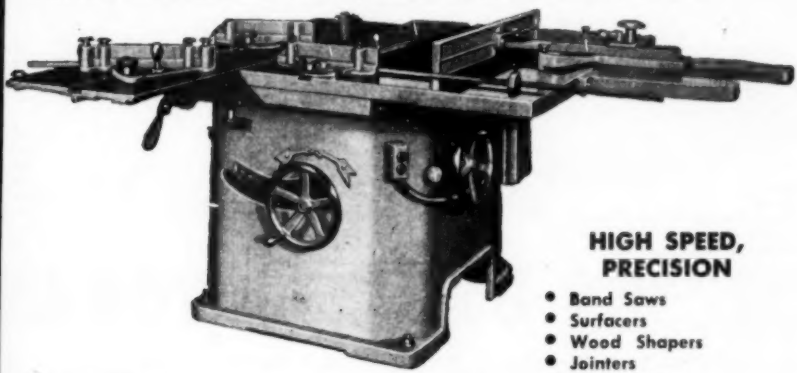

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Index to Advertisers

A

A.A.A. Saw & Tool Service & Supply Co. ..206-207
Abrasive Products, Inc. 41
Acme Steel Company 26
Adhesive Products Co. 198
Adjustable Clamp Co. 186
Aetna Plywood & Veneer Co. 140
Aget Detroit Company 92
American Cyanamid Company 14-15
American Machinery & Motor Co. 217
American Machinery Exchange 205
American Pulverizer Company 91
American Screw Company 43
Amos-Thompson Corp. 148
Armour and Company 87
Armstrong Machine Works 46
Associated Plywood Mills, Inc. 147
Atlantic Lumber Company 25
Atlas Press Company 157

B

Bacon-McMillan Manufacturing Company 130
Bass, Rudolf 193
Beach Manufacturing Company 4
Behr-Manning Corporation 133
Bell Machine Company 57
Berman & Company, Inc., L. 209
Berthelsen Engineering Works, V. 142
Beverly Manufacturing Company 129
Bickler, Edgar G. 225
Big Four Carbide Tool Company 36
Birds Eye Veneer Company 156
Black and Decker Manufacturing Company 31
Black Bros. Co., Inc. ..... Inside Back Cover
Blake & Johnson Company 23-43
Boice-Crane Co. 175-207
Buckeye Saw and Manufacturing Company 98
Burton Saw Company 103
Buss Machine Works 21

C

Carter Products Company 70
Central Screw Company 43
Childs, W. P. 86
Chism and Burtt Machinery Company 208
Clements Lumber Company, Al 232
Click, Mrs. A. Graham (Veneer Tables) 168
Clifton Machinery Company 205
Coe Manufacturing Company 151
Columbia Machinery and Engineering Corp. 160
Commander Manufacturing Company 193
Continental Screw Company 33-43
Cyclone Blow Pipe Co. 97

D

Day Company 197
Delmhorst Instrument Company 58
Delta Power Tool Div.
(Rockwell Mfg. Co.) 29
Detro Manufacturing & Sales Co. 128
Detroit Edge Tool Company 181
Detroit Surfacing Machine Company 125
DeWalt, Inc. 118
Diehl Machine Works, Inc., G. M. 6-7-167-182
Disston and Sons, Inc., Henry 73
DoAll Company 81
Doig, Inc., Wm. S. 173
Duro Metal Products Company 71

E

Ekstrom, Carlson & Company 67
Electric Equipment Company 207
Electronic Heating Corp. 44
Enterprise Company 201
Ervin Machinery Company 206-216

F

Fader & Co., A. L. 215
Field Co., Wm. H. 176
Foley Manufacturing Company 180
Ford & Associates, Chas. 211
Forest City Bit and Tool Company 84
Francis Company, Charles E. 163

G

Gaynes Engineering Company 224
Girdler Corporation 19
Gits Brothers Manufacturing Company 101
Globe Vise and Truck Company 93
Gluetools, Inc. 184
Goodspeed Machine Company 74
Green Machinery Company 210
Greenlee Bros. and Company 49
Greenlee Tool Co. 60
Gustafson & Scott Manufacturing Company 93-225
Guthrie Dry Kilns, Inc. 198

H

H. H. Products and Finishing Corp. 92
Hackett Company, J. Lee 208-210-211-214
Hamilton Caster & Manufacturing Co. 103
Hanchett Manufacturing Company 27
Handy Mfg. Co. 229
Hanna Engineering Works 10-11
Harrington, Inc., S. W. 206
Harris Machinery Company 207
Hart Woodworking Machine Co., Earle 149-205-210-223
Hartford Clamp Company 93
Haskew & Company, R. K. 207
Hassall, Inc., John 231
Hawker Manufacturing Company 178
Heston & Anderson Manufacturing Co. 190
Hill Brothers Veneer Company 189
Hough and Associates, Walker B. 103

I

Imrie Dry Kiln Company 39
Independent Stave Company 208
Industrial Machinery Company 207
Irvington Machine Works 152

J

Jakes Foundry Company 132
Jamestown Veneer and Plywood Corp. 134-135
Joa, Curt G. (Jenkins Machinery Co.) 209
Jones & Orth Cutter Head Company 111

K

Karbide King Tool Corp. 115
Kaydel Moisture Gage Company 92
Kenner, L. R. 205

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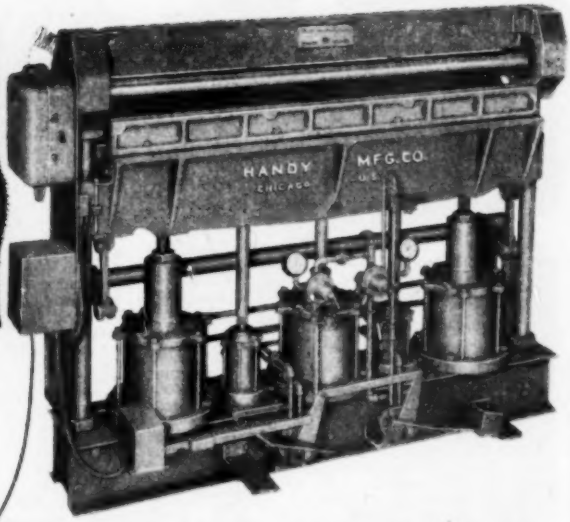

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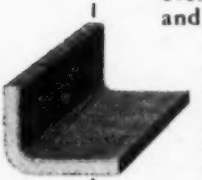

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Kentucky Wooderafters 209
Kingsford Chemical Company 221
Kirk and Blum Manufacturing Company 20
Koppers Company, Inc. 83

L

Laminated Veneers Company 150
Land, Inc., L. J. 208
Larson Plywood Company 154
Long, W. A., Company 198
Lumber Manufacturers, Inc. 88
Lundberg, David V. 205

M

McDonald Machinery Company 224
McDonough Mfg. Company 76
McKnight Machinery Company 65
Mattison Machine Works ..... Back Cover
Media Machine Works 77
Mereen-Johnson Machine Company 50
Merit Products Company 128
Mill Supply 206, 210
Millbury Machine Company 90
Moak Machine and Tool Company 203
Moisture Register Company 124
Moline Paint Manufacturing Company 112
Monical Machinery Company 210-213
Monite Waterproof Glue Company 102
Moore Dry Kiln Company 114
Morgan Manufacturing Company 126
Muskegon Machine Company 94

N

National Air Sander, Inc. 137
National Casein 16
National Plastic Products Company 158-159
National Screw & Mfg. Company 43
Nelson Company 122
New Process Screw Corp. 43
Newman Machine Company 89
North Brothers Manufacturing Company 187
Northern Hardwood Veneers, Inc. 168
Northfield Foundry & Machine Co. 227
Nutting Truck and Caster Company 201

O

O'Leary & Flynn 222
Oliver Machinery Company 1
Osborne & Sexton Machinery Co. 209-211-218-219

P

Paddock Tool Company 138
Parks Woodworking Machine Company 120
Pearson Sanding Machine Company 164-165
Perkins Glue Company 12
Peterzell and Company, Victor 209
Pheoll Manufacturing Company 100
Plycor Company 149
Porter Machinery Company, C. O. 30
Porter-Cable Machine Company 119
Power and Company, L. 18
Price and Rutzebeck 75
Process Engineering Corporation 103

Q

Quirk Crate & Cabinet Company 211

R

Radio Receptor Company, (Thermatron Division) 3
Reisen Hardwood Lumber Co. 90
Reliance Varnish Company 10
Rockford Screw Products Company 8
Rogers and Company, Samuel C. 13
Rohm and Haas Company 10
Root Company, B. M. 22
Russell-Jennings Manufacturing Company 19

S

Sand-Rite Manufacturing Company 7
Saw & Knife Specialty Company, Inc. 9
Shimer & Sons, Samuel J. 6
Simonds Saw and Steel Company 11
Sinker-Davis Company 19
Skilsaw, Inc. 1
Smith Machine Company, H. B. .....
Southern Screw Company 9
Southington Hardware Mfg. Co. 4
Spotnails, Inc. ..... Inside Front Cover
Stalter Edge Tool Company 19
Standard Dry Kiln Company 3
Stanley Works 59-121-19
Stem, Inc., Chester B. 15
Stromberg-Carlson Company 21
Stronghold Screw Products, Inc. 4
Surplus and Salvage Company, Inc. 20
Sutton Woodworking Machine Company 22
Synvar Corporation 15

T

Tannewitz Works 22-9
Taylor Manufacturing Co., James L. 19
Taylor-Stiles and Company 17
Thermatron Div. (Radio Receptor Co.) .....
Thriftmaster Products Corp. 18
Townsend Company 4
Towsley Trucks, Inc. 19

U

U. S. Cutting Chain Manufacturing Company 19
Union Tool Corporation 9
Ursprung Company, R. S. 20
Used and Rebuilt Machinery 20

V

Velepec, Co., Fred M. 19
Victory Carbide Saw and Tool Company 18
Virginia Machine Tool Company 13

W

Walter and Company Inc., B. 191-20
Wapakoneta Machine Company 2
Wardwell Manufacturing Company 8
Warren Brothers-Roads Company 19
Westinghouse Electric Corp. 8
Westman, P. D. 20
Whitney and Son, Inc., Baxter D. 1
Wilco Machine Works 206-207-208-20
Williams Patent Crusher and Pulverizer Co. 2
Willson Products, Inc. 17
Wisconsin Knife Works 18
Wood-Mosaic Company 20
Woodward Machinery Company 20
Woodworkers Tool Works 116-11

Y

Yates-American Machine Company 34-3
Young and Bertke Company 12

Z

Zeiller & Nagel, Inc. 13

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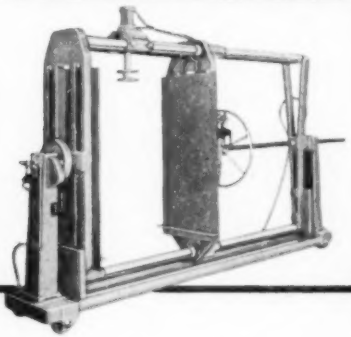

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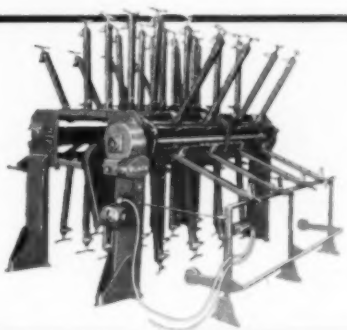

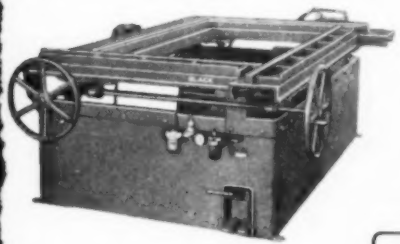

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